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TABLE OF CONTENTS

Editorial 350

The pH of Nasal Preparations 352

How to Win the Pharmacy Week Window Contest . . . 354

President Roosevelt's Pharmacy Week Message 357

The Madstone Humbug . . . . . *By Charles Whitebread* 358

Stilbestrol 361

Prepare Sugar-Free Pharmaceuticals for the Diabetic . . . *By George E. Crossen* 362

Study Your Customer Relations . . . . *By J. J. Toohy* 366

The Status of Vitamin E . . . . . *By Richard A. Deno* 370

Druggist's Digest 373

Picture of the Month 374

A New Modified Whitfield's Ointment . *By F. J. O'Brien* 376

The Philosophy of the Food, Drug and Cosmetic Act . . . *By Theodore G. Klumpp* 379

A. PH. A. Supports Research Projects in Five Colleges. . 385

New Prescription Specialties 386

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Editorial

WHAT MAKES PHARMACY WEEK IMPORTANT?

THERE are those who question the value of National Pharmacy Week. "If you are going to be professional, do so 52 weeks of the year and make every week Pharmacy Week," say the critics. Such individuals fail to appreciate certain factors which make this annual observance an important event.

First of all, pharmacy to-day is recovering from a period when showglobes were packed away in the cellar and too many pharmacists forgot the professional phase of their calling in a chase for illusive profits "out front." The current recovery is due, more than anything else, to advanced educational standards in the profession. The man who spends four years of his life studying pharmacy, biological sciences, chemistry, and such subjects is going to put the things he has learned to work for him after graduation. Pharmacy is a vastly different profession to-day than it was twenty years ago, as every pharmacist knows . . . but the public doesn't know it. If it did it would utilize the services of the pharmacist to a far greater degree than it does at present.

Pharmacy Week provides an opportunity for a concerted effort to tell the public this story of the profession's recovery. To be sure, it is an empty effort unless the pharmacist himself in his community exemplifies the picture of the pharmacist that is painted in the radio talk, service club address, and in the newspaper and magazine advertisement, but there are enough pharmacists who meet the description to make the effort very much worthwhile . . . and the number of such pharmacists is growing. The coördination of professional displays, addresses, and newspaper advertisements during a single week puts power behind the effort.

The activities of National Pharmacy Week are not a substitute for the individual pharmacist's efforts to impress the public with his professional service but a supplement to his work.

Every profession needs a public relations program of one kind or another to sell the American people on making greater use of its services. The high percentage of men who were rejected by selective service because of the condition of their teeth indicates that dentistry needs a strong program to impress the public with the need for adequate dental care. Medicine maintains an effective public relations program through the newspapers and the radio.

The methods each profession uses to tell its story differ. Medicine's approach is through health talks and articles which give sound advice to the public and impress them with the dangers of neglecting simple ailments. Dentistry, at present, is devoting the greater share of its attention to school children, urging them through booklets and other material to see their dentist regularly. The dentist has a real problem in the public's fear of pain which it must try to overcome. Pharmacy is the only one of the health professions which has a daily contact with the public through interior and window displays and it is only natural that it should capitalize on its advantage and use these windows to tell its story. The pharmacist can also use

newspaper advertising, radio talks and addresses of a refined character without fear of criticism.

Secondly, Pharmacy Week provides an opportunity for pharmacists to sit down and evaluate the progress of their profession and the part they play in it. To-day pharmacy is well on the road to assuming its rightful place among the health professions, thanks again to improved educational standards.

The forthcoming conference to be held between the AMERICAN PHARMACEUTICAL ASSOCIATION and the American Medical Association is indicative of the trend of pharmacy's development. Never before has such a conference been possible and it comes into being to-day because the pharmacist is beginning to enjoy real professional status in the minds of other professions.

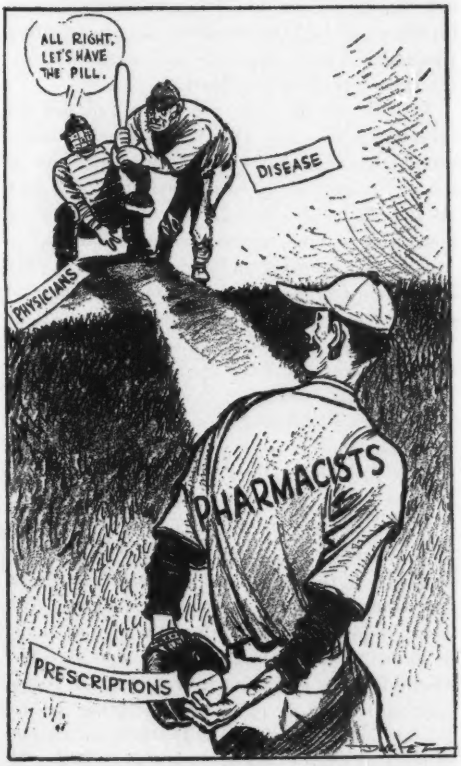
The fact that this Association, devoted exclusively to professional interests, has had its greatest increase in membership during the past year, and its recent annual convention in Detroit had the largest attendance in the history of the Association, are further indications of the trend.

More and more pharmacists are coming to the realization that the development of prescription practice and professional services provides greater economic stability. Years ago one heard pharmacists say, "I'd like to run a real professional pharmacy but I'd starve to death if I did." Pharmacists to-day are finding that they not only will not starve, but that they can enjoy greater financial return by being more professional, not to mention the inate satisfaction that comes to one in the knowledge that he is rendering a necessary service in the prevention and treatment of disease.

If National Pharmacy Week centers the attention of the public on the profession and the attention of the profession on itself it is distinctly worthwhile. It may not be the best means of doing it, but, if it isn't, it will do until a better way comes along.

National Pharmacy Week will be observed this year during the week of October 19th to 25th.

Battery for Health



Pharmacists, meeting in their eighty-ninth annual convention at the Hotel Statler, depicted with physicians as a team-working battery in the struggle against disease. Meeting with the AMERICAN PHARMACEUTICAL ASSOCIATION are a dozen associated organizations, including the American College of Apothecaries, among others.

The cartoon shown at the right, reproduced with the permission of the Detroit Times, appeared in that newspaper during the recent convention of the AMERICAN PHARMACEUTICAL ASSOCIATION. *It is indicative of the better treatment that pharmacy is receiving from the press to-day.*

THE pH OF NASAL PREPARATIONS

NEW STUDY SHOWS THE EFFECT OF HEAT, COLD, INFECTION, AND VASOCONSTRICTING DRUGS ON pH OF NASAL SECRETIONS; INDICATES THAT THEY SHOULD BE ACIDIFIED IN ACUTE RHINITIS

RHINOLOGISTS to-day are paying a great deal of attention to the hydrogen ion concentration of nasal secretions in an effort to establish the (1) changes in pH caused by respiratory infections, and (2) the possibility of more effective treatment of such infections with nasal preparations of properly adjusted pH.

Thus far, the literature has merely supplied the information that the pH of nasal secretions is approximately 7.2, that solutions in a pH range of 6.0 to 7.6 are considered non-irritating and that the pH of a nasal preparation for the treatment of congestion and inflammation should be about 6.7. Most of this information has been based upon pH determinations made of samples of nasal secretion collected by suction or by having the patient blow his nose. This method of examination has two disadvantages: (1) the nasal secretions are divorced from their normal environment, and (2) the samples so collected are susceptible to changes in pH on exposure to air which occur rapidly during the first few minutes after removal from the nose.

Now, however, Dr. Noah D. Fabricant, of the Department of Laryngology, Rhinology and Otology and the Department of Pathology, of the University of Illinois College of Medicine, Chicago, supplies more accurate data. By means of a specially designed silver-silver chloride glass electrode and a Coleman electrometer, Dr. Fabricant has studied the pH of nasal secretions *in situ*. For his findings, covering daily studies of a group of patients over a period of more than a year, he has been awarded the Casselberry Award of the American Laryngological Association for 1941. A summary of his first paper on the subject, published in *Archives of Otolaryngology*, for July 1941 (34 (5), 150–163), is as follows:

1. The pH of nasal secretion in a normal nose is not constant but varies, minute by minute, from approximately 5.5 to 6.5.

2. The pH of nasal secretion varies with sleep, rest, the ingestion of food, and emotional changes, as well as with the incidence of an infection.

3. A drink of cold water will change the pH of nasal secretions from 6.4 to 7.0, a trend toward alkalinity.

4. An ice bag applied to each side of the nose for 20 minutes increased the pH of nasal secretions from 5.9 to 6.6.

5. An electric heater placed at a distance of 2 feet from the patient's face and permitted to glow for 15 minutes decreased the pH of nasal secretions from 6.1 to 5.2, a trend toward acidity.

6. Drugs with a highly alkaline hydrogen ion concentration, such as metaphedrine and amphetamine, induced a drift toward alkalinity in the nasal secretions. Drugs with a pH range of 5.5 to 6.5, such as 1 per cent solution of ephedrine hydrochloride in saline solution, Gluco-fedrine and Isobalant, do not markedly affect the normal pH of nasal secretions. Drugs with a pH level of less than 5, including neosynephine hydrochloride, synthetic epinephrine 1:1000, Adrenalin Inhalant 1:1000, and propadrine hydrochloride 1 per cent, induce a noticeable drift downward in the pH of nasal secretions, *i. e.*, toward acidity. The use of an amphetamine (benzedrine) inhaler increased the pH of nasal secretions from 6.2 to 7.8 in 6 minutes.

7. In some cases the drift in the pH of nasal secretions lasted for an hour or longer while in other cases it lasted for shorter periods, indicating the effect of temperature and barometric pressure on the action of drugs.

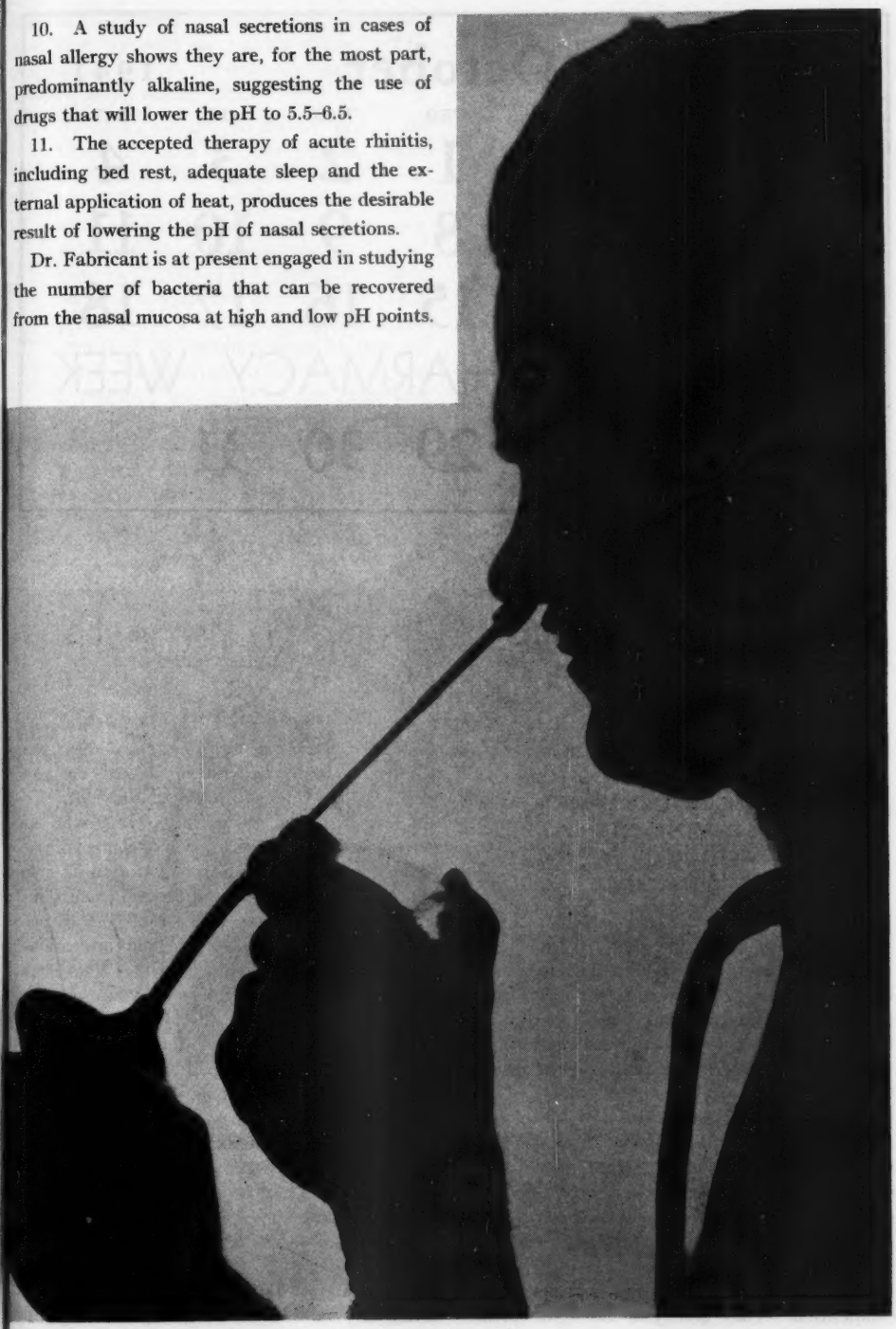
8. During an attack of acute rhinitis or acute rhinosinusitis the pH of nasal secretions is more alkaline than normal. Thus, those vasoconstrictors which can lower the nasal pH from an abnormal alkaline status to a desirably normal acid status may perform a valuable function and those drugs prolong an undesirable status of nasal pH in which bacteria accompanying the infection find a fertile field for growth.

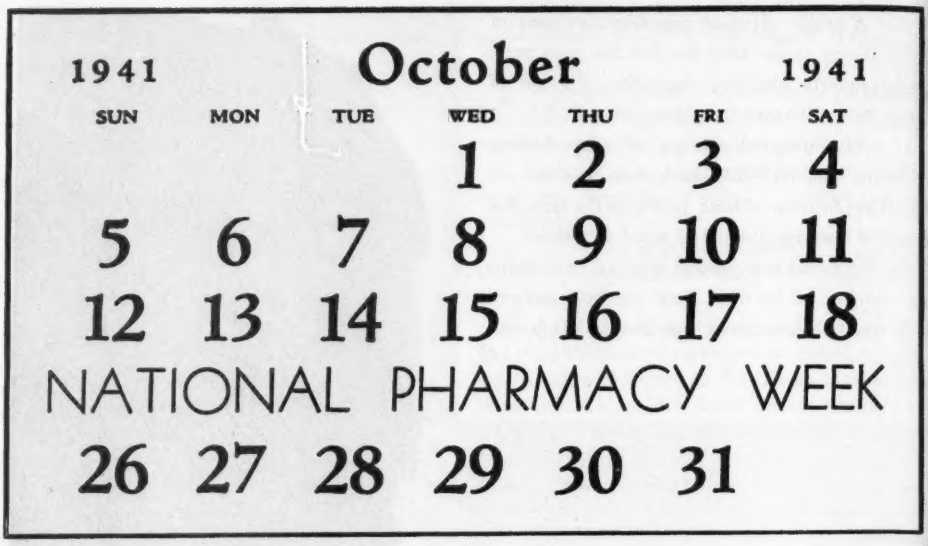
9. Dr. Fabricant suggests that there be a standardization of the pH values of all nasal vasoconstrictor drugs on the market and that during an attack of acute rhinitis or acute rhinosinusitis a drug which lowers the nasal pH to 5.5–6.5 be used. Dr. Fabricant suggests 1 per cent ephedrine hydrochloride in saline solution.

10. A study of nasal secretions in cases of nasal allergy shows they are, for the most part, predominantly alkaline, suggesting the use of drugs that will lower the pH to 5.5–6.5.

11. The accepted therapy of acute rhinitis, including bed rest, adequate sleep and the external application of heat, produces the desirable result of lowering the pH of nasal secretions.

Dr. Fabricant is at present engaged in studying the number of bacteria that can be recovered from the nasal mucosa at high and low pH points.





HOW TO WIN THE PHARMACY WEEK WINDOW CONTEST

PHARMACIST'S PART IN THE CIVILIAN DEFENSE PROGRAM OF HIS COMMUNITY OFFERS TIMELY THEME FOR DRAMATIC PROFESSIONAL DISPLAYS

SOME pharmacist, somewhere in the United States, is going to make a professional window display during the week of October 19th to 25th that is going to bring him state and national recognition, not to mention a beautiful silver trophy, because his will be the best Pharmacy Week display of the year.

That pharmacist can be *you*.

You can win the coveted honor this year if you will sit down now and plan your display. Of course, it would have been better if you had started to think it out a month or two ago, but you didn't, so why not make up for lost time and work out your plans to-night?

With this article you will find the rules for the competition. They give you the requirements for eligibility but there are other factors you must consider if you are going to win the contest.

First of all, choose a theme or story for your display. The rules say you do not have to carry out any particular theme but anyone who has ever served as a judge in such a contest knows that a display that tells a specific story is far more impressive than just a good general professional window. The primary purpose of your display is to impress the public with your professional services. Just how shall you do it? What phase of your professional services shall you use to put over your message? It's a pretty sure bet that the displays which will catch the judges' eyes this year will be those developed around civilian defense because such a theme is extremely timely right now. The display material distributed through service wholesale druggists this year by the National Wholesale Druggists' Association ties in with the defense movement . . . if you haven't obtained a set of the display material, phone your wholesaler right away and see if he has any left.

Now that you have decided upon the general theme of your window, decide upon the specific

phase of the pharmacist's services in civilian defense that you will use for the display. The pharmacist can serve the defense program in the following ways, among others:

1. By taking a "refresher course" in first aid to qualify as a first aid warden. Most pharmacists had first aid instruction at college and can easily become proficient with a little further training. In their years of working hand-in-hand with physicians in all sorts of emergencies they have acquired a calmness and stability under pressure which is a prime requisite of one who is to be depended upon for first aid duties. Furthermore the pharmacist has a thorough knowledge of the drugs and medicines used in first aid. If you build your display around this theme you might wish to use the illustration appearing in an article on first aid in *Life* for September 29th.
2. The pharmacist can serve his community under civilian defense by making his pharmacy a supplementary source of supply for the gallons of antiseptic solutions, burn dressings, and other medication that would be needed in an emergency of considerable proportions. Particularly in communities which do not have hospitals the pharmacy would be an important supply depot.
3. One of the most important ways in which the pharmacist can serve the defense program right now is to wage a vigorous campaign in behalf of preventive medicine. A "flu" epidemic this winter in the vicinity of an airplane factory or munitions plant would take hundreds of men out of work and would retard production. The American people must be kept well during the next year at any cost. Every man-hour of labor is needed to keep factories working on the production of war materials. The

Here is the display of Llewellyn L. Eisentraut, of Des Moines, which won the award last year.

pharmacist is the key man in advising the public to not neglect any minor cold, slight injury, or simple illness which might develop into a serious condition. Urge the public to take care of their health, to call a physician promptly when illness strikes, and to take adequate precautions against disease. This phase of the civilian defense movement can be developed into a striking window.

After you have selected your specific theme, develop a simple slogan or catchy phrase to serve as a title for your display. A slogan such as "It's Patriotic to Be Healthy," "Your Pharmacy Is An Arsenal of Drugs and Medicines for Defense," or "In Every Emergency Pharmacy Volunteers Its Services," might be used.

The next step is to organize the material you are going to use to tell a dramatic story. Use every bit of apparatus and material you have that will add to the impressiveness of your display but don't clutter up the window with unnecessary material that does not contribute to the theme you are using. A simple display is often the most effective for it is difficult to secure a dramatic effect if a confusing array of mortars and pestles, graduates, bottles, etc., is used.

One word of warning: Do not use any display material or signs which contain the advertising of a manufacturer for, if you do, your display will be disqualified under the rules.

If you are an expert photographer and have a good camera, take your own picture of the window and make an 8 in. x 10 in. enlargement to submit in the contest. Unless you can do justice to the display, however, have a professional photographer take the picture. The few dollars it costs will be well spent for the judges have to evaluate your display on the basis of the photograph alone. They won't see the bright coloring of the crepe paper and the attractive lighting. They won't even be able to read the signs unless you submit a good clear photograph. Don't risk your chances with a poor picture.

Mail the photograph of your window to the Secretary of your State Pharmaceutical Association as soon as possible; be sure it reaches him before November 15th. The winning display in each state will be submitted in the national competition. You must win your state contest to be eligible for the National contest.

Bring that trophy to your store this year!

RULES FOR NATIONAL PHARMACY WEEK DISPLAY CONTEST

1. Photographs of professional window displays must be submitted to the Secretary of the respective State Pharmaceutical Association on or before November 15, 1941, in order that the winner may be judged and entered in the National Contest.
2. Professional Pharmacy Week Windows must not contain any commercial advertising.
3. Pharmacy Week Windows which have been entered in former years will be ineligible.
4. Pharmacy Week Windows should convey some message which will inform the public of the professional character of pharmacy.
5. Pharmacy Week Windows may or may not carry out any particular theme and all windows will be judged upon the professional character, arrangement of window and the value of the message carried to the public.
6. Photographs submitted of windows should be 8 in. x 10 in. in size or some other suitable size so that judges will be enabled to study details of the display.
7. Each State Association shall appoint a committee within its own state at some date prior to November 15th, and this committee will meet and select the best window within its state, and a photograph of that window shall be mailed to Mr. John E. O'Brien, 1700 Douglas Street, Omaha, Nebraska, not later than December 15, 1941.
8. As soon as possible after December 15th, a committee will be chosen to select the best window from the states as a whole and the pharmacist whose window is judged the best will be awarded the Robert J. Ruth trophy supplied by the Federal Wholesale Druggists' Association.
9. Only one photograph from each state may be entered in the National Contest, and that one will be the one which is judged to be the best in its own state.

THE WHITE HOUSE
WASHINGTON

September 24, 1941

Dear Mr. Christensen:

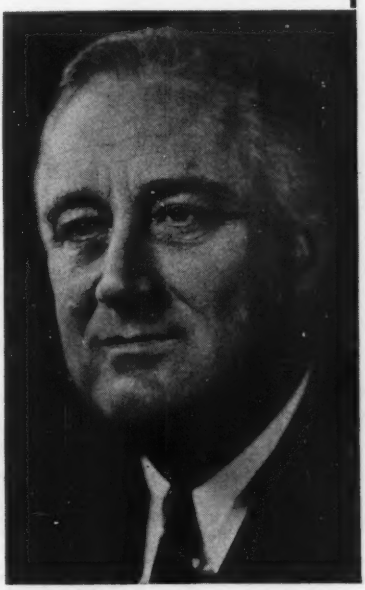
Once again it is my pleasure to extend my greetings to the members of the American Pharmaceutical Association. I want you to know that I appreciate very much the splendid cooperation that your organization and its members have given to the medical services of the Government during this past year.

National Pharmacy Week should bring to the attention of the people of this country the fine part you have played in National Defense.

Very sincerely yours,

Franklin D. Roosevelt

Mr. B. V. Christensen,
President,.
American Pharmaceutical Association,
Ohio State University,
Columbus, Ohio.



PRESIDENT ROOSEVELT'S
PHARMACY WEEK MESSAGE

Photo by Harris & Ewing

THE MADSTONE HUMBUG

by CHARLES WHITEBREAD

ASSOCIATE CURATOR, DIVISION OF MEDICINE AND PUBLIC HEALTH
UNITED STATES NATIONAL MUSEUM

MAGIC PEBBLES ARE STILL USED TO-DAY IN BACKWOODS SECTIONS FOR SNAKE AND DOG BITES. PHARMACISTS CAN HELP DEBUNK SUCH IDEAS

AS A general rule it is best, in discussing matters pertaining to health, to deal with the positive side of the question, that is, to direct the thoughts of persons to what should be done to cure or prevent disease rather than to what should not be done. Occasionally, however, exceptions to the rule are advisable to combat harmful fallacies and fantasies such as the madstone humbug.

Collections of magic medicines serve the good purpose of helping to break down improper beliefs, sentiments, and superstitions. They teach the futility of trusting to invocations, incantations, fetiches, talismans, amulets, charms, etc., when health is involved. Such collections can do much to educate the public away from the absolute finality that "what was good enough for grandma is good enough for me," and toward the need for continuous adjustment to keep abreast of the times. The display of examples of these magic remedies with appropriate appraisal of their value most assuredly helps to narrow the gap between the discovery of approved remedies and their adoption into general use.

MAGIC POWER OF STONES

The origin of superstitious beliefs in regard to the magic powers of stones is traced to Chaldea, and Pliny[1] refers to a book on the subject by Lachalios, of Babylon, which was dedicated to Mithridates. The superstitions concerning the healing powers of these objects are most persistent. Bezoars are supposed to prevent melancholia and all kinds of poisoning. Holed stones are still worn about the body for protection. The marvelous virtues attributed to precious stones by the ancients came about first on account of their rarity and later because of their supposed potency against disease. From the engraved stones, representing the twelve tribes of Israel, on the breastplate of the ancient high priest, to the birthstones and monthstones of the present, there is a continuity of belief in the magic powers of these precious objects.

The ability of precious stones to preserve peace in the home was questioned by a droll Frenchman, who, in commenting on this superstition in Molière's "L'Amour Mèdecin," facetiously remarked that "there is nothing so well calculated to restore a drooping young lady to health as a handsome set of diamonds, rubies, or emeralds." Evil as well as beneficial powers were ascribed to stones, and these ancient beliefs have lingered on. Even to-day some women dread to wear an opal, while others say a fatality will overtake the wearer of pearls.

STONES FOR SNAKEBITE

The origin of the use of a stone to treat the bite of a poisonous serpent is lost in antiquity, but we have had a rational method of treating such a misfortune at least back to the time of Erasistratus, 305–280 B.C.[2] This famous doctor and founder of the school of medicine at Alexandria, in speaking on the subject, said: "from the effects which poison introduced in this manner produces, we may derive a general indication as to how a cure may be obtained. The poison, it will be noted, destroys very quickly the parts with which it comes in contact, and then, by spreading throughout the body, causes death. The thing to do, therefore, is to draw it as quickly as possible out of the body and thus arrest its further spread. To this end the wound should be enlarged and its sides scarified; then, after it has been sucked, a cupping glass should be applied over it; and, finally, it should be cauterized." The disagreeable part of this treatment is the sucking out of the venom particularly if the person rendering assistance has an open wound on the lips or in the oral cavity.

With a prevailing great faith in the powers of stones, what would have been more natural than

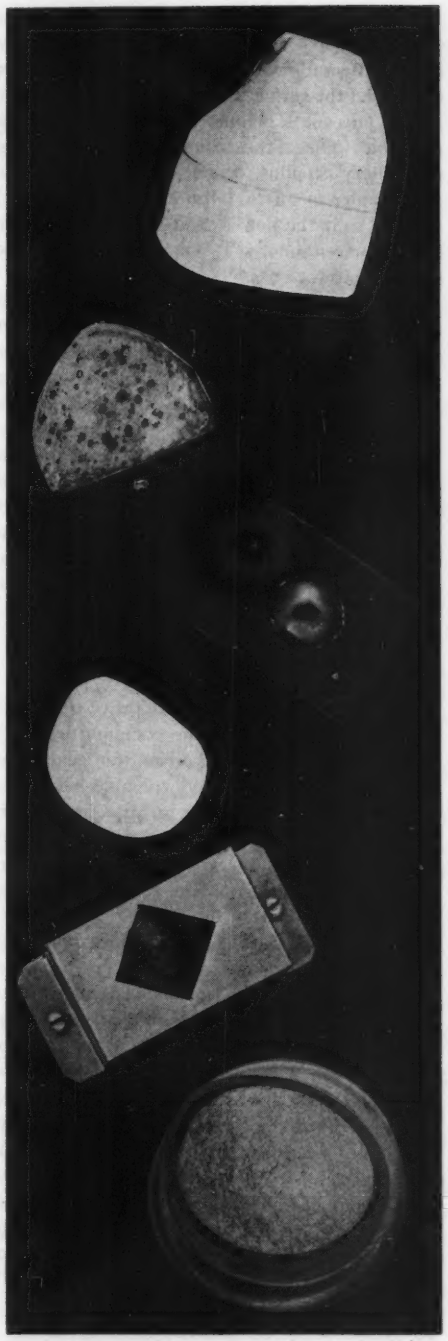
Presented before the Section on Historical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Detroit Meeting.

for some leader of the ancients to think of applying a magic object of this kind to do the unpleasant task of sucking out the venom. Of course just how the practice of using snakestones originated will never be known but we may assume, without too great stretch of the imagination, that it began in some such manner as this.

The fact that these stones came to be applied to absorb the venom from bites of rabid dogs gave us the name of madstone. These stones have been used in the United States from the time of our first settlements. John Clayton, minister in the settlement of Jamestown from 1684 to 1686, had firm convictions about their efficiency.[3] Later they were not very highly esteemed, by the medical profession at least, for we hear of Dr. James Mease, who practiced in Richmond, in 1800, criticizing a colleague for indulging in quackery to the extent of using a snakestone in treating a case of hydrophobia.[4]

MADSTONES

Snakestones and madstones seem to have been originally small pieces of rock, selected on account of some peculiarity of color, form, or texture. Some of the famous madstones were composed of the mineral, halloysite. Owners claim that stones of this kind absorb moisture with avidity and adhere to a moistened surface until nearly saturated. Another stone in the National Museum's collection of magic remedies is a brown, striated, porous pebble. The person from whom this specimen was obtained claimed it derived its attributed powers from its peculiar appearance. The not unusual fact that the person bitten by a mad dog recovered after the application of this pebble was all the proof of its efficacy that its owner required. A stone sent in as a true madstone was said to have been found in the stomach of a deer



A group of interesting madstones from the collection of the U. S. National Museum. Top to bottom: a halloysite madstone, a porous pebble, a polished seed, a piece of carbonate of lime, a gallstone from an ox, and a ball of matted hair.

Photo by courtesy of the U. S. National Museum

by an Apache Indian of New Mexico. It is simply a pebble of carbonate of lime which may have been swallowed by the deer with its food or drink, and the surface etched by the action of the gastric juices in a manner which appealed to the credulous. One of the earliest forms of madstones is a biliary calculus, or gallstone, formed in the gall bladder of an ox. Ibn Baithar (1248 A.D.) ascribes to it the power of attracting the poison of venomous animals. It is applied to both snake and dog bites.

Nowadays some of the so-called snakestones and madstones are not stones at all. Now other substances compete with the magic minerals. An example of this type of madstone is a highly polished seed of *Gymnocladus dioica*, the Kentucky coffee tree. One like the specimen in the National Museum's collection was offered for sale as a genuine madstone of proven efficacy for the sum of $1000. Another specimen is a ball of matted hair, such as is occasionally found in the stomach of domesticated cattle, buffaloes, and other ruminants, and is said to have been used successfully in two cases of dog bite.

STILL IN USE

Much evidence is available to prove that madstones are still used in some communities. We hear of some being handed down from generation to generation as prized and valuable heirlooms. The heirs endeavor to obtain an appraisal of their value and thus bring them to light. Occasionally one is offered to a museum at an outrageous price. Possessors, usually people in backwoods sections, utilize them profitably in this way. The owner contrives to pass the word around his community that he has a madstone which has cured or prevented hydrophobia and extracted venom from a snake's bite. Victims are taken to the madstone owner instead of being rushed to a physician or hospital, with a resulting delay which may be sufficient to cost the unfortunate person his life. Of course this, like other forms of magic, is practiced in a secret, underhand manner. The owners of the stones are shrewd enough not to specify a uniform fee for the use of the stone, thus making themselves liable to a charge of practicing medicine without a license. They do, however, accept whatever is given to them. In many instances this is much more than a doctor's fee.

The extent of the danger from dog or snake bites varies, depending on many conditions. First, all snakes that bite are not poisonous. Next, a snake's supply of venom may have been exhausted on prey or in combat with another snake, and as a result the bite will not cause death. It is well known, too, that only a small percentage of dog bites are inflicted by rabid animals. These cases, the kind which would have recovered anyhow, are undoubtedly the ones madstones have miraculously cured.

It is estimated that from 1500 to 2000 bites by poisonous snakes occur in the United States each year. The mortality runs from 20 to 30 per cent with the large diamondback rattlers to less than one per cent with such small species as the copperhead and ground rattlers. Anti-snake-bite serum, which is produced much the same as diphtheria antitoxin, is an approved treatment. This medicine has been shown to reduce the death rate to about one-fourth of that in cases not having the advantage of its employment. The cure for hydrophobia is rabies vaccine which must be given before the infection has had time to definitely develop.

The number of inquiries received about madstones indicate that there are far too many persons in the United States who use them, approve of their use, or are sufficiently credulous to try them. Hence, this word on the subject as a reminder to those in a good position to put this particularly dangerous form of treatment in the magic category in which it belongs.

THE PHARMACIST'S TASK

Pharmacists do as much as any group to teach the advisability of using approved methods and medicines in preference to magic procedures and unapproved remedies. They render valuable service in warning of the dangers of self-medication, and accomplish much in the way of bringing about effective coöperation between physicians and the public. They are tolerant of the commonsense beliefs of others, but when a dangerous practice such as the use of madstones comes to their attention, they and all other persons to whom the public looks for guidance in matters relating to medicines and health must be outspoken in condemnation of it. This is the only way this sort of humbug can be successfully combatted.

[1] Pliny, *Hist. Nat.*, xxxvii, 10.
[2] Albert H. Buck, "The Growth of Medicine from the Earliest Times to about 1800."
[3] W. B. Blanton, "Medicine in Virginia in the Seventeenth Century."
[4] W. B. Blanton, "Medicine in Virginia in the Eighteenth Century."

Stilbestrol

NEW SYNTHETIC ESTROGEN RELEASED LAST MONTH IS EFFECTIVE BY MOUTH AND WILL LOWER THE COST OF TREATMENT OF MENOPAUSE

EVER since the day when the value of the estrogenic hormones in the relief of the menopausal syndrome was established, medical and pharmaceutical research has sought to provide a synthetic product which would have the same action but would be more easily administered and would cost less than the natural estrogens. Regardless of the efficacy of the natural estrogens, the fact that they were comparatively ineffective when administered orally and, therefore, had to be administered by injection, and the fact that potent preparations were relatively costly represented drawbacks which prevented their greatest usefulness.

In 1938 Dodds and his associates in England announced the development of the orally potent, synthetic estrogenic substance, 4:4-dihydroxy-alpha:beta-diethyl· stilbene, now known as *diethylstilbestrol* or stilbestrol. Although it was promptly put into use in England, its distribution in this country was delayed by conflicting reports of toxic side reactions and it was not until last month that the Federal Food and Drug Administration permitted applications for the introduction of this new drug to become effective.

To physicians it means a new, potent drug which they may prescribe; to pharmacists it means a new prescription pharmaceutical to stock and dispense; but to thousands of women nearing middle age it means the promise of relief from the nervousness, fatigue, lassitude, flushes, chills, excitability, headaches, sleeplessness, vertigo and general irritability which make the menopause one of the most feared of natural body changes. It will also be used in the treatment of senile vaginitis, gonorrheal vaginitis, and relieving and preventing painful engorgement of the breasts during the suppression of lactation.

The untoward reactions of stilbestrol administration include nausea, abdominal distress, anorexia, diarrhea, headaches, dizziness and thirst. Some investigators report an extremely high percentage of these side reactions, while others report a complete absence or a low percentage of them. Recent studies characterize them as annoying but no more harmful, in proper hands, than the side reactions of sulfa drugs. In cases where such reactions have occurred, a decrease in dosage or withdrawal of the drug has caused them to disappear with no apparent permanent ill effects.

Nausea often can be minimized by administering the tablets with milk after meals or at bedtime, by subdividing the dosage, or by administration with sodium bicarbonate.

Tablets of stilbestrol are available in strengths of 0.1 mg , 0.25 mg., 0.5 mg. and 1.0 mg. Ampules of stilbestrol in oil are available in 0.5 mg. in 1 cc. and 1.0 mg. in 1 cc. Suppositories are available in strengths of 0.1 mg. and 0.5 mg.

Since the treatment of the menopause is largely symptomatic, that is, the control of the distressing symptoms, dosage is largely an individual matter to be adjusted by the attending physician. Stilbestrol is a potent drug and dosage should be kept at the minimum necessary for relief. It is recommended that small daily doses be administered at first, the amount increased at weekly intervals until relief is obtained, and the dosage then reduced until a maintenance level is found.

In the treatment of the menopause or of senile vaginitis 0.1 to 1 mg. may be given daily by mouth; 0.5 to 2 mg., 2 to 3 times a week by injection; or one 0.5-mg. suppository daily.

In the treatment of gonorrheal vaginitis, a total of 20 mg. may be given over a period of 1 to 3 weeks; or one 0.1 mg. suppository may be given daily for 3 weeks.

For suppression of lactation, 5 mg. 1 to 3 times a day may be given for 2 to 4 days; or 5 mg. once or twice daily by injection for 2 to 4 days.

Needless to say, stilbestrol is a drug to be dispensed only on the prescription of a physician.

Pity the diabetic child who catches a cold or contracts some other illness, for he must take his medicine "straight" without benefit of syrups or elixirs to disguise its taste, unless you open the way for physicians to prescribe sugar-free vehicles.

Photo by H. Armstrong Roberts

PREPARE SUGAR-FREE PHARMACEUTICALS FOR THE DIABETIC

by **GEORGE E. CROSSEN**

COLLEGE OF PHARMACY, UNIVERSITY OF MINNESOTA

WHY SHOULD THE PATIENT ON A SUGAR-FREE DIET BE DEPRIVED OF PLEASANTLY FLAVORED VEHICLES FOR HIS MEDICATION? HERE IS AN OPPORTUNITY FOR A PROFESSIONAL SERVICE

THE life of the diabetic patient has been prolonged to an indefinite degree by means of insulin and its preparations and because of this prolongation of life, the number of persons who are afflicted with this malady is constantly increasing. Estimates placing this number anywhere between one-half million and two and one-half millions can be found in the literature. From the more conservative of these estimates it can be calculated that an average of 1 out of every 250 individuals in these United States of America is a victim of this disease.

Diabetic persons are maintained on carefully regulated, low carbohydrate diets and it is recognized that departures from these diets usually result in discomfort if not in actual distress to the individual. This knowledge has been used as the basis for a justifiable exploitation of a myriad of products. Special foods, pastries, even candies, all designed for the specific purpose of avoiding the possibility of increasing the sugar intake of the insulin-using individual, are now available on the market and these contribute their share toward making the existence of the diabetic as pleasant and free from danger as possible. Thus the everyday needs of one in the

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rather precarious position of the diabetic patient are at least partially provided for.

Unfortunately, however, no such provision has been made for that time when he contracts some other disease in addition to his diabetes. By this it is meant that his physician cannot, in most cases, contrive to mask the unpleasant taste of a therapeutically active substance either by selecting one of the official pharmaceuticals containing that substance or by selecting one of the preparations designed specifically for the purpose of masking the taste of medicaments. The reason for this is indicated in the table shown with this article which lists the amount of sucrose that is contained in some of the more common of these preparations.

Of course, the physician can avoid the possibility of increasing the carbohydrate intake of his diabetic patient by directing that the therapeutically active substances be dispensed as such or in simple aqueous or alcoholic solution. But these substances or their simple solutions are no less bitter or saline or insipid to the taste of the diabetic than they are to that of his more fortunate neighbor. Why must he be penalized for his unfortunate condition by being forced to imbibe his medicaments in nauseating or otherwise unpleasant form?

Certain of the pharmaceutical specialty houses have seen the need for preparations of the type here discussed and have placed such materials on the market. We, as pharmacists, can do far more than this if we will but recognize the need of the diabetic for special medicaments of which he can partake with safety and will place at least a few such preparations at the disposal of the physician.

In an attempt to satisfy a part of this need, several of the more commonly used elixirs were prepared according to the formulas given below.

SUGAR-FREE AROMATIC ELIXIR

Compound Spirit of Orange	12	cc.
Soluble Saccharin	0.60	Gm.
Purified Talcum	30	Gm.
Alcohol	250	cc.
Glycerin	250	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The compound spirit of orange was triturated with the talcum until it was thoroughly distributed. The alcohol and glycerin were mixed with sufficient water to make 1000 cc., and this liquid was added to the mixture in the mortar slowly and with continued stirring. The resulting mixture was transferred to

APPROXIMATE QUANTITIES OF SUCROSE CONTAINED IN ONE LITER AND IN ONE TEASPOONFUL OF SOME OF THE OFFICIAL ELIXIRS

Elixir	cc. Syrup	Gm. Sucrose per Liter	Gm. Sucrose in: 4 cc.	5 cc.
Almond, Compound	400	340	1.36	1.70
Aminopyrine	400	340	1.36	1.70
Aqueous	400	340	1.36	1.70
Aromatic	375	318.75	1.28	1.59
Aromatic, Red	367.5	312.35	1.25	1.56
Bitter Orange	400	340	1.36	1.70
Bromides, Five	375	315	1.26	1.58
Bromides, Three	400	340	1.36	1.70
Cardamom, Compound	400	340	1.36	1.70
Glycyrrhiza	328	278.8	1.12	1.39
Iso-Alcoholic, Low		320	1.28	1.60
Pepsin	185	157.25	0.63	0.79
Sodium Salicylate, Compound	337.5	286.88	1.15	1.43
Terpin Hydrate, plain or with Codeine	100	85	0.34	0.43

a flask and shaken intermittently during about fifteen minutes, after which it was allowed to stand for 24 hours. The product was then filtered and the soluble saccharin was dissolved in the clear filtrate.

This product was superior to one that did not contain the glycerin in that it had more desirable properties of solubility and miscibility.

SUGAR-FREE AQUEOUS ELIXIR

Vanillin	1	Gm.
Soluble Saccharin	0.75	Gm.
Oil of Bitter Almond	0.30	cc.
Oil of Fennel	0.20	cc.
Chloroform	0.60	cc.
Glycerin	50	cc.
Orange Flower Water	200	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The orange flower water was mixed with 500 cc. of distilled water and the vanillin and soluble saccharin were dissolved in this liquid by agitation. The glycerin, in which the oils and chloroform had been mixed, was then added and this was followed by sufficient distilled water to make the product measure 1000 cc. After agitating thoroughly, the liquid was allowed to stand for about six hours. It was then filtered, using 10 Gm. of purified talcum to clarify the product.

This elixir was also prepared according to a modification of the formula proposed for N. F. VII, the latter yielding a product that was superior in many ways.

SUGAR-FREE COMPOUND ELIXIR OF ALMOND

Vanillin	1	Gm.
Soluble Saccharin	0.75	Gm.
Oil of Bitter Almond	0.5	cc.
Alcohol	50	cc.
Orange Flower Water	150	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The soluble saccharin was dissolved in the orange flower water and this liquid was added slowly and with stirring to a solution of the vanillin and the oil in the alcohol. Sufficient distilled water was then added to make the product up to 1000 cc., and the solution was filtered until clear.

The product became dark in color upon aging but it was found that this could be remedied by the addition of 1 Gm. of citric acid to the formula.

SUGAR-FREE COMPOUND ELIXIR OF CARDAMOM

Compound Spirit of Cardamom	10	cc.
Soluble Saccharin	0.75	Gm.
Alcohol	90	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The spirit was mixed with the alcohol and 500 cc. of distilled water were added slowly and with stirring. The soluble saccharin was dissolved in a small amount of distilled water and this solution was added to the above mixture and was followed by sufficient distilled water to make the product measure 1000 cc. The liquid was shaken well and allowed to stand for 24 hours. It was then filtered, using 10 Gm. of purified talcum to clarify the product.

SUGAR-FREE ELIXIR OF BITTER ORANGE

Oil of Bitter Orange	1	cc.
Tincture of Bitter Orange Peel	20	cc.
Soluble Saccharin	0.75	Gm.
Orange Flower Water	20	cc.
Alcohol	300	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The oil and the tincture were mixed with the alcohol and the orange flower water was added. The soluble saccharin was dissolved in a small amount of distilled water and this solution was added to the above mixture and was followed by sufficient distilled water to make the product measure 1000 cc. The liquid was shaken thoroughly and was allowed to stand for 24 hours, after which it was filtered until clear.

SUGAR-FREE ELIXIR OF TERPIN HYDRATE

Terpin Hydrate	17	Gm.
Tincture of Sweet Orange Peel	20	cc.
Spirit of Bitter Almond	5	cc.
Saccharin	0.20	Gm.
Alcohol	425	cc.
Glycerin	400	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The terpin hydrate, the tincture, the spirit, and the saccharin were dissolved in the alcohol, the glycerin was added and the product was made up to volume with distilled water, shaken and filtered.

ISO-ALCOHOLIC ELIXIR, HIGH

Compound Spirit of Orange	4	cc.
Saccharin	0.75	Gm.
Glycerin	200	cc.
Alcohol, *q. s.*		
ad	1000	cc.

This preparation was made only for the purpose of comparing its flavor with that of the present official elixir which, in the opinion of the author, is much too sweet. Use of the above indicated quantity of saccharin rather than the excessive amount now employed remedied the situation and rendered this a pleasant and palatable preparation.

SUGAR-FREE ISO-ALCOHOLIC ELIXIR, LOW

Compound Spirit of Orange	10	cc.
Soluble Saccharin	0.75	Gm.
Alcohol	100	cc.
Glycerin	200	cc.
Distilled Water, *q. s.*		
ad	1000	cc.

The soluble saccharin was dissolved in a small amount of distilled water and this solution was added to a mixture of the alcohol, glycerin and 500 cc. of distilled water. The compound spirit of orange was then added, after which the liquid was agitated thoroughly, made up to volume with distilled water, shaken again and allowed to stand for 24 hours. The liquid was then filtered, using 10 Gm. of purified talcum to clarify the product.

The use of saccharin as the sweetening agent in these solutions was found to entail no serious difficulty in so far as manufacture was concerned and was advantageous in most cases in that the previous preparation of syrup or the laborious solution of sucrose in the product was thus eliminated. Each of the products was found to be flavored and sweetened equally as well as was the similar official preparation.

Since there is a definite and ever-increasing need for such materials and in view of the fact that some sort of official recognition of this need would be of inestimable value to the pharmacist in encouraging the use of U. S. P. and N. F. preparations by the physician, it is recommended that permission and directions for deviation from the official formulas such as is here discussed be included in the next revisions of the official compendia. In the meantime, individual pharmacists may place these formulas at the disposal of their physicians.

FINANCIAL AID TO BRITISH PHARMACISTS INVITED

Considerable interest has been aroused in the drug field throughout the nation by reports emphasizing the bitter experiences which British pharmacists have suffered during the past year as a result of incessant bombing by Nazi airmen. Not only have many individual business enterprises been wiped out by the demolition of stores and business building, but owners have been killed, or mained severely, leaving their dependents without support except that furnished by sympathetic friends and relatives.

In order to mitigate the suffering, the British Pharmaceutical Society has made heroic efforts to provide help for these innocent victims of barbaric warfare both through its members and through others sympathetically disposed. The task, however, is of such proportions that the British pharmacists may not be able to complete it unaided. The Secretary of the British Pharmaceutical Society, Hugh H. Linstead, outlined the harassing situation and expressed the hope that pharmacists in this country would come to the aid of their British colleagues. Impressed by the sincerity of the plea, and realizing the need for an agency which would enable the drug interests in this country to translate their sympathy for our British friends into a practical gesture, the undersigned group has sponsored a movement which it hopes will receive the cordial approval of interested American pharmacists.

This group has filed application for registry with the State Department, as provided for by an Act of Congress, under the title of "Aid to British Pharmacists," and is so registered.

While the need for supplies and equipment is great, it is not feasible to accept such donations because of transportation difficulties. It is suggested, therefore, that all donations be in the form of money, and that checks be made to the order of "Aid to British Pharmacists," and sent to the Treasurer, Mr. Samuel L. Hilton, 1033 22nd Street, N. W., Washington, D. C.

Members of the group sponsoring "Aid to British Pharmacists":

Robert P. Fischelis, James H. Beal, E. Fullerton Cook, A. G. DuMez, Ivor Griffith, Samuel L. Hilton, Ambrose Hunsberger, E. F. Kelly, J. Leon Lascoff.

STUDY YOUR CUSTOMER RELATIONS

by J. J. TOOHY

MANAGER OF DISTRIBUTION, E. R. SQUIBB AND SONS.

RISING WAGES, INCREASED EMPLOYMENT, AND GOOD CROP PRICES ARE EXPECTED TO INCREASE DRUG STORE SALES FIFTEEN PER CENT DURING THE COMING YEAR. HERE IS HOW TO GET YOUR SHARE

THE first apothecary had to have a customer and customers always have been, and always will be, the life blood of a successful drug store. It is particularly timely now to review customer relations because even if you ever should have such a thing as a seller's market, and you know you do *not* have it to-day, you couldn't afford to be indifferent or careless toward those you serve.

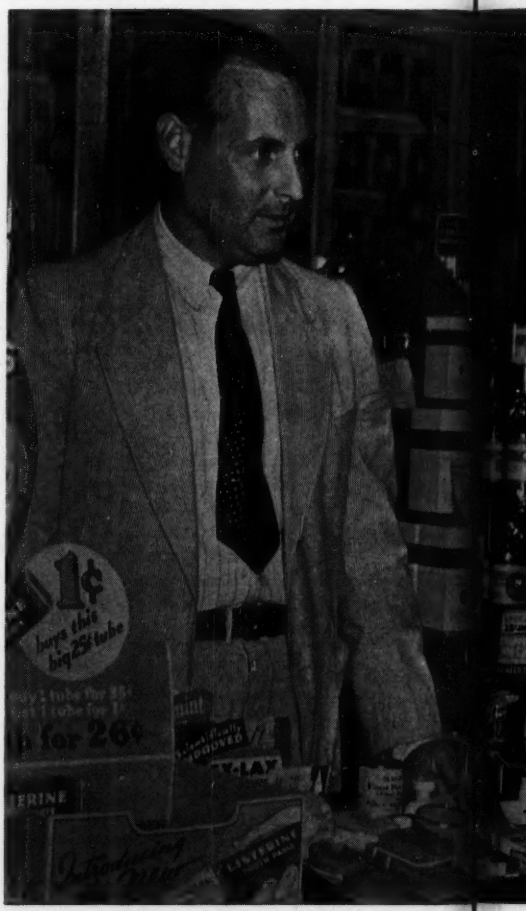
The momentum of rising prices and wages, increased employment, the tremendous spending for armament and the lease-lend program, and good crop prices, are estimated to bring $4000 additional volume or, roughly, a 15 per cent sales increase, to the average drug store during the coming year.

Retarding influences, such as labor troubles, dislocations in industry due to lack of materials or because of priorities which favor defense before civilian needs, may affect particular communities, but retailing, particularly retailing in the pharmaceutical industry, will generally enjoy a steadily upward trend.

Shortage of materials will worry us more in the future than it does right now but pharmacists will be far less handicapped by shortages of essential drugs than will retailers in other industries that are dependent on metals, such as dealers in hardware, automobiles, and household appliances.

Recently a wholesaler's expansion program was seriously delayed because of a shortage of steel shelving. In our own laboratories a new synthetic organic plant is being delayed in its construction for lack of essential steel. These are isolated instances but in the aggregate they have a large nuisance value, tax your patience, and accent the importance of the retailer as a procurer and supplier of service and pharmaceuticals to his professional and lay customers.

The government does not yet frown on anticipating your needs of merchandise that is likely to become scarce. The smart merchant will find careful buying, not reckless buying, a highly profitable phase of his store operation for some time to come. And yet the risks for retailers in anticipatory buying are high because such a large



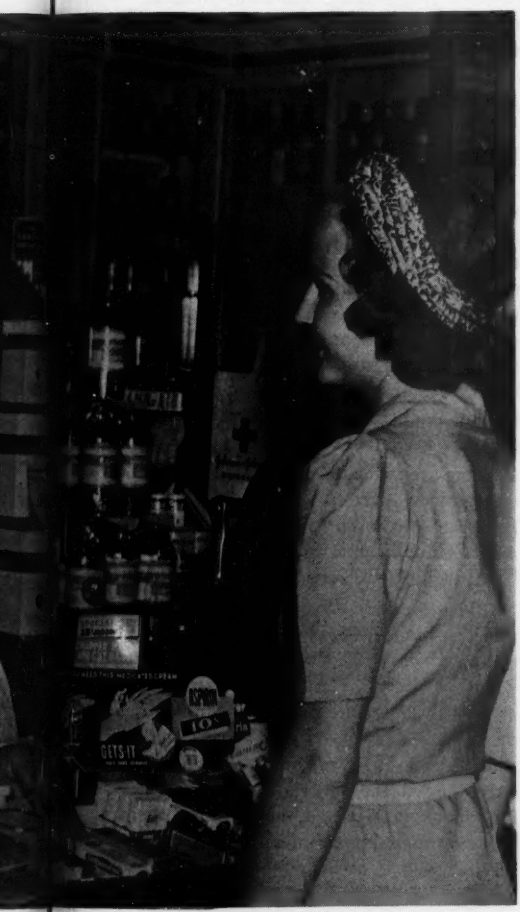
Presented before the Section on Pharmaceutical Economics, AMERICAN PHARMACEUTICAL ASSOCIATION, Detroit Meeting.

percentage of his volume is represented in inventory.

GET YOUR SHARE

Few of you who are growing and prospering, however, have the complacency or the capital to sit back and let this new business drift by to somebody else. You are going to get your share. In the past, price cutting, which is probably the lowest form of merchandising whether practiced by manufacturer, wholesaler, or retailer, was the favorite device to "muscle in" on competition. It still is where fair-trade or unfair practice legislation offers no protection.

Photo by H. Armstrong Roberts



But generally the pharmacist sells consumer merchandise at about the same prices as other retailers in his community. That puts the emphasis on good retailing—not on price.

They used to tell the story of the farmer who wouldn't go to the meeting at the Grange Hall where the professor from the Agricultural College was going to speak because he already knew more about farming than he put into practice. Now they tell it about the pharmacist who sold out and went to work managing a chain unit. One of his friends dropped in and found him bustling around, busy as a bee. "Jim," he said, "looks like you have learned a lot of new angles since you have been in the chain store game," but Jim said, "No, I haven't learned anything I didn't know before but I am sure doing a lot of things I didn't bother to do before."

Somebody very simply summed up a retailer's problem as:

a. Getting more customers in.
b. Selling more of the customers that come in.

That may be over-simplifying it. It takes a double bond or a ductless gland secretion to explain why some pharmacists with equal potentials are successful while others are not. That doubtless applies to all human activities, whether we are compounding prescriptions, or selling, or farming, or playing bridge.

Since good retailing and not price is the order of the day, good retailing demands *favorable customer relations* and that means selling and serving your customers so they will prefer to do business with you rather than somebody else.

THE CUSTOMER'S CHOICE

You all know that customers usually have reasons for preferring one establishment over another. Sometimes it is a single reason, perhaps price, or convenience, or habit. Usually it's a combination of which convenience of location is probably outstanding. A chain operator planning to add three new stores to his group told me that he was waiting until he could find exactly the right location because, as he said, "location is the most important thing in our business."

Maybe it's because your store has a distinctive character, a charm, an atmosphere that attracts the customers to you. It could be your modernization program, or new lighting, or displays, the quality appeal of the merchandise and the ser-

vice that you render, or your character might be expressed in an old-fashioned, unchanging atmosphere, which creates an impression of reliability, confidence, and capable service.

More than likely, you and your personnel have been extraordinarily careful about developing a friendly, courteous technique that makes your customers feel that you are glad to see them come in, that you are interested in helping them, that you are glad to pass along to them interesting facts about the merchandise they want, and that they know you will be glad to see them come back. Good retailing, after all, sells merchandise that won't come back to customers who will.

CREATE AN IMPRESSION

I would like to develop two of these reasons for favorable customer relations a little more specifically. We all know that a bank doesn't need an imposing, gigantic, granite structure just to conduct its business of making loans and cashing checks and handling financial accounts. Call it window dressing or what you will, but banks are careful to create impressions of safety, security, and confidence, so that their clients feel that at any time they can get one hundred cents on each of their dollars.

The visual impression of your store, the quality of your merchandise, and the way you display it, does create character and reputation, does build confidence and trust, and does sell merchandise.

It is reliably reported that 87 per cent of retail sales are made through eye appeal. People are reminded to get what they see displayed and customers are introduced to new products that you want to sell by attractive, selling displays.

A successful window display must get attention in seven seconds, it must sell merchandise, easier when priced, and leave an after-taste of good quality.

Retail pharmacists necessarily carry much more merchandise than they can display. This means selecting profitable, seasonal, traffic building, and intriguing merchandise, and changing those displays frequently. Since displays are the principal medium of the retail pharmacist's advertising, it takes a good deal of thought and careful planning, and a great deal of good hard work to develop and use displays that tell your customers the character of your establishment and show them the quality and completeness of the merchandise you are selling. This means not too much cardboard, not too much space for low profit merchandise, but plenty of the merchandise that the customer expects to find in a good pharmacy.

THE PERSONAL EQUATION

Now let me say a few words on the all-important subject of developing favorable customer relations through the personal equation of your salespeople. There is a lot more buying power ready and waiting to be sold to-day and people like to buy what they can, not only for their needs, but the things they would like to have. So you and I like to do our buying where we are known by name, where we get good service, good attention and good merchandise, and where we know that our business is appreciated. Retailing is a very personal relationship, sometimes intimate, sometimes confidential, so that we favor the stores with friendly salespeople who are interested in our particular situation, especially if we are temporarily distressed by illness at home. That means selling with sincerity, without pressing, but with candor and with a smile.

Of vital importance to salespeople is the knowledge of the merchandise they are selling and the confidence that assures them they know that they know their merchandise. The average layman is much better informed on materia medica than he used to be but his knowledge is still skimpy, confused, and superficial. What may be trite and "old stuff" to the pharmacist is still new and interesting to the average customer and passing it on in a friendly way is welcome and creates a favorable impression.

There are two stores in a small city I know of, only a block apart. In one, the management and personnel are indifferent to the great development of the vitamin business. They carry only what they have to carry, and that's mighty little.

Under the able direction of the owner of the other pharmacy, the personnel have dug into the complicated story of vitamins, they know the value and potency claims of the various products, and pass along information about diet supplements in a pleasant, friendly way, with the result that they do a lot of business. They have not only learned their vitamins but they have the long-range perspective that assures them that they are rendering an important and worth-while service. They are not just helping to build healthy youngsters, they are not just filling pre-

scriptions for vitamin products. They know that thousands of people walk the streets with subclinical vitamin deficiencies as a result of our modern diet and probably intercurrent illnesses that keep vitamin reserves at a low ebb. They want this business in their drug store; it belongs there; it is good business, profitable and growing; it merits the special attention of retail pharmacists everywhere; it puts into every-day practice the satisfaction of serving the community by helping to maintain and preserve the good health of customers and their families.

The rapid growth of new treatments, the addition of new pharmaceutical products, places a tremendous burden on the average salesperson to accumulate the information that is necessary to render an informed, helpful service. It calls for a systematic accumulation of product information from packages, from labels, from professional literature, and from pharmaceutical journals.

A FIVE-POINT FORMULA

We have found it extremely helpful in summarizing our medical literature, in training our own field representatives and in studying the products of the market, to accumulate information by a five-point formula. Here is how we do it for Thyloquinone, for example:

1. *Restate the product in a simple one sentence description.*

   Thyloquinone is synthetic vitamin K in the form of a complex chemical compound —2-methyl-1,4-naphthoquinone.

2. *What are its indications?*

   To prevent intercranial hemorrhage in the newborn and preoperatively in surgery where blood prothrombin is subnormal.

3. *How used?*

   In capsules and in dropper packages for oral administration; also available intramuscularly when a more prolonged effect is required than that which follows oral administration.

4. *What are its advantages and points of superiority?*

   More stable, more potent, more economical, than naturally occurring vitamin K. Simple to administer, rapid in its effect in correcting vitamin K deficiencies.

5. *Price and dosage forms.*

   In this connection the pharmacist would endeavor to memorize the most commonly used size and its prevailing retail price.

While Thyloquinone is used for illustration, obviously the form applies to any unfamiliar therapeutic agent.

The professions and lay public were never more dependent on the services of the retail pharmacist than they are to-day. The vending machine type of retailing in pharmacy is definitely on the ebb. New trends in materia medica, new difficulties in getting supplies, new regulations by the Food and Drug Administration, new demands from the profession for product and dosage information, and a highly receptive buying public with money to spend, call for the very best in retail pharmacy. The key to the situation is the steady customer, the client that you want to attract and hold. Your program of developing favorable customer relations centers always around a trust in you and your service, in appreciation of the personal equation of your salespeople whom you are training to be friendly, intelligent, informed, and interested, that yours may be the leading retail pharmacy in your community.

TAKE PART

IN

NATIONAL PHARMACY WEEK

Install a dramatic window display telling the story of Pharmacy's service to the public—and enter a photograph of the display in the national contest.

Make this year's observance the best ever—don't forget the dates:

OCTOBER 19 TO 25

THE STATUS OF VITAMIN E

by RICHARD A. DENO, Ph.D.

ASSOCIATE PROFESSOR OF BIOLOGICAL SCIENCES, RUTGERS UNIVERSITY COLLEGE OF PHARMACY

APPLICATION OF TOCOPHEROLS TO HUMAN AND ANIMAL NEEDS YET TO BE FULLY DECIDED, MICHIGAN SYMPOSIUM REVEALS

IN MANY respects vitamin E occupies a unique position, even in a class where unusual activities are the rule rather than the exception. Although it is apparently essential for normal growth and reproduction, few instances exist either in man or other animals where a widespread deficiency exists. This in itself sets vitamin E apart from its fellows, and a further distinction is seen in the apparently unrelated functions that vitamin E fulfils. It is needed for normal reproduction in both male and female, yet a deficiency produces totally dissimilar effects in the two sexes, but in both male and female the lack of vitamin E produces profound muscular changes ending in paralysis and death. Damage to reproductive capacity in the male caused by a deficiency in this vitamin is irreparable; once rendered sterile the male can never regain the lost powers. In the female the opposite is true; given a supply of vitamin E a previously depleted female animal can bear young as well as ever. No other vitamin shows marked discrimination between the sexes.

Even research on the chemical nature of vitamin E has followed an unusual pattern—*the substance was synthesized before its exact chemical formula was known!*

These and many other interesting facts on the "anti-sterility" vitamin E were discussed in a series of lectures delivered by Dr. H. A. Mattill, Professor of Biochemistry, University of Iowa, as part of a seminar on the fat-soluble vitamins held during the past summer at the University of Michigan. Arranged by Dr. H. B. Lewis, Director of the College of Pharmacy and head of the Department of Biochemistry, the seminar brought to Ann Arbor outstanding authorities on vitamins A, D, E, and K. Dr. Mattill has been concerned with the study of vitamin E ever since its discovery nearly twenty years ago, and has investigated especially its chemical nature and the relation of the vitamin to rancidity in fats.

FUNCTION IN REPRODUCTION

The importance of vitamin E in maintaining normal reproductive activities in both male and female rats is well known. By extension, the chemical is presumed to be of similar importance to other mammals, and it has been used in both humans and domesticated animals in certain cases of habitual abortion. Several clinical reports have appeared supporting the view that vitamin E is of value in the treatment of repeated spontaneous and threatened abortion. In some cases the administration of wheat germ oil, which is a concentrated source of the vitamin, or, more recently, the synthetic preparations, has resulted in a successful termination of pregnancy where the case history has shown as many as five abortions previously. In spite of these reports many clinicians still regard the value of the vitamin in such cases as not completely proved, and the Council on Pharmacy and Chemistry of the American Medical Association has stated that the evidence for the effectiveness of vitamin E in the form of wheat germ oil for the treatment of habitual abortion is meager. The wide distribution of vitamin E in foodstuffs makes a deficiency unusual. Even butter fat, when introduced to the extent of 10 per cent in a synthetic reproduction-deficient diet, insures continuous fertility and success in lactation.

The effect of a vitamin E deficient diet on the female rat consists in the inability to give birth to living young. Fed on such a diet the animal will mate normally, will become pregnant, and the young will begin to develop in the normal fashion within the uterus. About midway of the period of pregnancy, which is about three weeks in the rat, the development of the young is arrested. They either are born prematurely and die, or remain within the mother where they die and disintegrate. This abnormal procedure usually has no permanently harmful effects on the mother, for if she is given the vitamin subsequently and is allowed to mate, a normal litter will be produced. Even if the deficiency is made

Photo by Graf from Atlas

up early in the pregnancy of a vitamin-starved mother she will carry her young in a reasonably normal fashion. It thus appears that the harmful effects of the deficiency are in this instance exerted on the unborn young rather than on the adult.

In the male rat the story is different. When reared on a diet normal in every other respect but lacking in vitamin E the male shows degenerative changes in his reproductive cells. The sperm fail to develop properly, the tissues of the testes which manufacture sperm degenerate, and the animal becomes incapable of assuming his normal role in reproduction, that of fertilizing the egg cells to start the development of the young and to bring in the hereditary elements from the paternal side. Further, the damage to the reproductive parts of the male is irreparable, once it has proceeded to the point of sterility no amount of wheat germ oil or other vitamin-rich material will restore the lost powers. The changes here are in the tissues of the adult. Since a developing animal consists of cells whose nuclei occupy a relatively large area, and the sperm cells and testes tissue are also highly nuclear, it has been suggested that vitamin E is essential for normal functioning of the nucleus in the cell. This has not been proved, but it gives a possible explanation of the divergent effects observed in the two sexes.

FUNCTION IN MUSCULAR ACTIVITY

Apparently unrelated to the function in reproduction is the need for adequate supplies of vitamin E in muscular activity. If a vitamin-starved female rat is given just enough vitamin E to allow her to bear living young, and the family is then maintained on a deficiency diet, the young will be practically devoid of the vitamin. Under these conditions they show a paralysis early in life, beginning in the hind legs and finally extending to nearly all of the muscles of the body. Even though they are well nourished otherwise the animals soon become quite helpless, are unable to move about in their cages, and they die. If the muscles of such rats are examined microscopically they are seen to have degenerated in the same manner as do the tissues of the testes in male adults fed in a similar way.

Microscopically these rat muscles resemble the muscles of humans who are afflicted by a relatively rare and not well-known disease termed muscular dystrophy. The tissues literally waste away, weakness and paralysis follow, and eventually death. This similarity led to the use of vitamin E in the human disorders, with some reports of success and others of failure. If the disease has made much progress in man, vitamin E does not produce a cure. If given early enough it may prove beneficial in arresting the progress of the degenerative changes in the muscles. The

situation in the rat is exactly comparable. An adequate intake of vitamin E will *prevent* the muscle changes, but once the damage has progressed to a marked degree the vitamin is ineffective in producing a cure. At first it was believed that the damage might be nervous in nature, but it is now thought that the changes are preëminently of muscular origin.

CHEMICAL NATURE

Like other members of the vitamin family, vitamin E received its alphabetical designation early in its life to distinguish it from its relatives and because it could not be christened logically until the chemical nature became known. Saponification of oils rich in the vitamin, ether extraction of the saponification products and condensation of the unsaponified fraction gave a concentrate with high potency. From studies on the concentrates organic chemists were able to learn something of the chemical constitution, but were undecided whether the nucleus of the compound was coumarane or chromane. While still undecided on the exact structure, a compound was synthesized with the physical, chemical, and physiological properties of the best concentrates. This compound was later shown to be vitamin E and was named *tocopherol*. The ending, of course, indicates that it is an alcohol and the first three syllables mean "having to do with the bearing of young." Studies of various natural products revealed the presence of more than one *tocopherol* with varying degrees of biological activity but similar chemical make-up and properties. The most active one, and the form used in synthetic pharmaceutical preparations, is *alpha-tocopherol* (*α-tocopherol*).

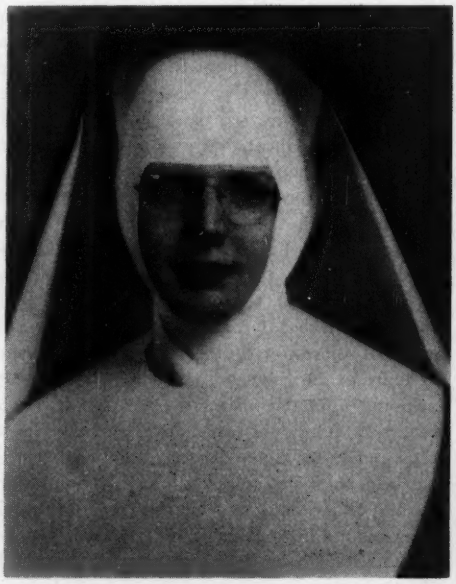
Fifteen years passed between the recognition of the importance of vitamin E in reproduction and the elucidation of its chemical constitution and synthesis. Thus a rapid succession of chemical studies has given another synthetic vitamin, but the applications of alpha-tocopherol in clinical medicine are yet to be fully decided.

ST. JOHN'S STUDENT WINS FAIRCHILD SCHOLARSHIP

Sister Etheldreda, of St. John's University College of Pharmacy, Brooklyn, N. Y., has been awarded the Fairchild Scholarship for 1941, having made the highest general average in competitive examinations with twenty-three other candidates. Her grades were 76 in materia medica, 86 in chemistry, 94 in pharmacy, and her general average was 85.33. She made the highest grades in chemistry and pharmacy of any candidate and was 1 point under the highest grade in materia medica.

Sister Etheldreda was born on April 8, 1917, at Lynn, Mass. She attended St. Michael's Parochial School and the Immaculata Academy at Hamburg, N. Y., graduating from the latter school in 1934. She entered the novitiate of the Congregation of the Franciscan Sisters of St. Joseph, at Hamburg, and, in 1937, entered the St. John's University College of Pharmacy.

During her freshman, sophomore, and junior years at St. John's, Sister Etheldreda won scholarships for the highest general average in her class each year—93.8, 96.4, and 97.3. She was graduated in June of this year, *summa cum laude*, with the Dean's Medal for general excellence, the Delta Sigma Theta Medal in Dispensing Pharmacy, the Rho Pi Phi Medal in Analytical Chemistry, the Pharmacy Medal for original work on particle size studies of official chemicals and the Student Council Medal in Bacteriology.



SISTER ETHELDREDA

Druggists' Digest

OF NEW FORMULAS, RECENT PHARMACEUTICAL DEVELOPMENTS, AND OTHER PROFESSIONAL DATA

AMMONIUM CHLORIDE FOR PREMENSTRUAL DISTRESS

Many women suffer from a syndrome which occurs before menstrual periods and which has been called premenstrual tension. Symptoms of the condition include headache, emotional instability, irritability, abdominal distention, nausea and vomiting, and pruritus and swelling of the vulva.

Drs. J. P. Greenhill and S. C. Freed, of Chicago, have advanced the theory that this syndrome is due to water and sodium retention in the tissues, as a result of cyclic ovarian activity, with a subsequent increase in extracellular fluid in the brain (headache), gastro-intestinal tract (abdominal distention) or beneath the skin (pruritis). On the basis of this theory they administered ammonium chloride in order to prevent the retention of sodium in the tissues. Patients were given 3 Gm. a day, divided into 3 doses, starting 10 to 12 days before the expected menstrual period, and they were asked to refrain from using table salt or sodium bicarbonate preparations

Of 40 patients, 34 had definite relief.

—*Jaur. A. M. A., 117:7 (August 16, 1941), 504*

STABILIZING PEPSIN IN LIQUID PREPARATIONS

Formulas for four new solutions of pepsin are recommended by C. J. Klemme and C. L. Boswell, of the Purdue University School of Pharmacy, in the Scientific Edition of this JOURNAL for September 1941. Pepsin is an enzyme whose proteolytic activity is affected by many factors, such as hydrogen ion concentration, purity of the enzyme, concentration of the enzyme, temperature and the presence of added electrolytes and other substances.

Klemme and Boswell have found that hydrogen ion concentration is of the utmost importance in the stabilizing of pepsin and their studies show that a pH range of 4.5 to 5.5 is best. They recommend that pepsin solutions contain at least 20 per cent of glycerin as a stabilizing agent and that the alcoholic concentration of such preparations be not more than 15 per cent. In making pepsin solutions it is not necessary to avoid agitation.

The four new formulas for pepsin solutions which undergo no noticeable color change or sedimentation, and which will retain their peptic activity over a long period of time without suffering any appreciable loss in activity, are as follows:

FORMULA I

Pepsin, U. S. P.	50 Gm.
Citric Acid Crystals	10 Gm.
Exsiccated Sodium Phosphate	14.5 Gm.
Glycerol	200.0 cc.
Aromatic Elixir	200.0 cc.
Distilled Water, a sufficient quantity, To make	1000 cc.

FORMULA II

Pepsin, U. S. P.	35 Gm.
Citric Acid Crystals	10 Gm.
Exsiccated Sodium Phosphate	14.5 Gm.
Distilled Water	300.0 cc.
Glycerol	200.0 cc.
Aromatic Elixir, a sufficient quantity, To make	1000 cc.

Note: The pH of the above preparation is approximately 5, whereas the N. F. VI Elixir of Pepsin has a pH slightly over 4.

FORMULA III

Pepsin, U. S. P.	100 Gm.
Glycerol	500 cc.
Distilled Water, a sufficient quantity, To make	1000 cc.

Note: The above product differs from the N. F. VI Glycerite of Pepsin in that the diluted hydrochloric acid is omitted. The pH of the above product is approximately 4.5.

FORMULA IV

Pepsin, U. S. P.	50	Gm.
Citric Acid Crystals	10	Gm.
Exsiccated Sodium Phosphate	14.5	Gm.
Glycerol	500	cc.
Distilled Water, a sufficient quantity, To make	1000	cc.

The method of preparation of the above products is of considerable importance. The suggested procedure is as follows: Dissolve the citric acid and exsiccated sodium phosphate in a sufficient amount of distilled water (about 200 to 300 cc.), add the pepsin and stir until dissolved. (In Formula III, the buffer substances are omitted.) Allow the solution to stand over night in a refrigerator. Filter the solution, preferably by suction, and wash the filter thoroughly with distilled water. To the clear filtrate add the glycerol and the remaining constituents along with enough distilled water to bring the product up to the required volume. Mix thoroughly and place in a closed container.

ACTIVE PRINCIPLE FROM RASPBERRY LEAVES DESCRIBED

Raspberry leaf tea has long been a part of medical folklore. Although scorned by physicians, it has been taken faithfully by countless pregnant women to facilitate an "easy" delivery.

In *Lancet* for July 5, 1941, Dr. J. H. Burn, Professor of Pharmacology of Oxford, and E. R. Withell, Head of the Pharmacy Department of Central Technical College, Birmingham, announced that extracts of raspberry leaves contain a principle which relaxes the smooth muscle of the uterus and intestine when this is in tone. The action has been observed in the body of the cat and also when the muscle is suspended in a bath. The same extract of raspberry leaves causes contraction of the uterus of the rabbit *in situ*, and also of the isolated uterus of the cat, rabbit, and guinea pig when these are not in tone.

The extracts were prepared by making an infusion of the dried raspberry leaves (*Rubus ideus*), using 100 cc. of water for 10 Gm. of leaf. This was allowed to stand for half an hour and then squeezed through muslin. The infusion was concentrated by evaporation at 40° C. under reduced pressure until the activity of 1 cc. equals 2 Gm. of the lead.

The authors point out that the extract may prove to be of value in the relief of painful menstruation.

←PICTURE OF THE MONTH

The Seventh Revision of the National Formulary nears completion. In the American Institute of Pharmacy office of Dr. Justin L. Powers, chairman of the N. F. Committee, galley proofs read by 150 authorities on pharmacy, chemistry, pharmacognosy, pharmacology, and biological sciences are carefully checked by the A. PH. A. laboratory staff and corrections are noted in order that the new edition will represent the latest and best thought in the fields it covers. Shown checking the galley proofs are left to right: Kenneth L. Kelly, Dr. Roy K. Snyder, E. C. Beeler and Dr. Powers. The N. F. VII is expected to be available within the next few months.

ORAL COLD VACCINE TABLETS FOUND EFFECTIVE

Arizona is known as a state to which persons with "weak" respiratory systems go to live. Such persons are extremely susceptible to colds and the number of cases presented to the Health Department of the University of Arizona for parenteral injections represented a real problem.

Drs. M. R. Palmer and J. E. Andes, of the University Health Department, began to experiment with oral immunization and their results were so satisfactory that the vaccine method is used only in exceptional cases to-day. Using Vacagen (Sharp and Dohme), the physicians secured dramatic results in the treatment as well as in the prevention of colds.

Two tablets were given one-half hour before each meal and two just before retiring until at least ten tablets had been taken. Symptoms subsided completely within two or three days in 80 to 90 per cent of the large series of cases treated. Relief was so satisfactory that all other forms of coryza medication were practically discontinued.

As an immunizing agent, they suggested a dosage of one tablet with a glass of water to be taken on an empty stomach, preferably one hour before breakfast, repeating this on seven successive days. The resistance thus acquired was maintained with the use of three tablets weekly for a period of three months. Not only was the actual number of colds reduced but the few which did develop were mild and of short duration.

—*Southwestern Med., May 1941, 144–148*

A NEW MODIFIED WHITFIELD'S OINTMENT

by FRANCIS J. O'BRIEN

PROFESSOR OF PHARMACY, UNION UNIVERSITY, ALBANY COLLEGE OF PHARMACY

ADDITION OF THYMOL AND USE OF COLD CREAM BASE INCREASES THE FUNGISTATIC ACTION OF THIS POPULAR ATHLETE'S FOOT PRODUCT

IN A previous paper,[1] the fungistatic efficiency of thymol and oil of cinnamon in various ointment bases was demonstrated. It was also shown that the type of base used had considerable effect on the fungistatic value of such ointments, vanishing cream and cold cream bases showing a superiority over a base composed of petrolatum, lanolin, and wax.

In the tests made at that time, Whitfield's Ointment N. F. inhibited the growth of *Trichophyton interdigitale* and *Monilia albicans* to a greater extent than did the official ointments of phenol, iodine, sulfur, ammoniated mercury, or yellow oxide of mercury. Whitfield's Ointment has been widely used in the treatment of fungus infections of the skin because of its kerolytic action and because of its antiseptic value. Ointments made with either $2^1/_2$ per cent of thymol or 1 per cent of oil of cinnamon, or both, are more highly fungistatic than Whitfield's Ointment or any of the official ointments previously mentioned but they have no kerolytic action. It would appear, therefore, that the addition of thymol or oil of cinnamon to Whitfield's Ointment should increase the fungistatic action of the ointment, especially if a base of cold cream were used instead of the present petrolatum and lanolin base.

The purpose of this paper is to report the results of a series of experiments which were made to determine whether the addition of $2^1/_2$ per cent of thymol and the change of the base of the present ointment would materially increase its fungistatic value.

Three fungi commonly found in skin infections, *Trichophyton interdigitale*, *Trichophyton rosaceum* and *Monilia albicans* were used as test organisms. Full strength and half strength Whitfield's Ointments were prepared using the official base and also using a base of cold cream. To a portion of each ointment $2^1/_2$ per cent of thymol was added by dissolving in an equal amount of warm mineral oil and adding to the ointment by mechanical incorporation.

COLD CREAM BASE

The cold cream used as a base was prepared from the following formula:

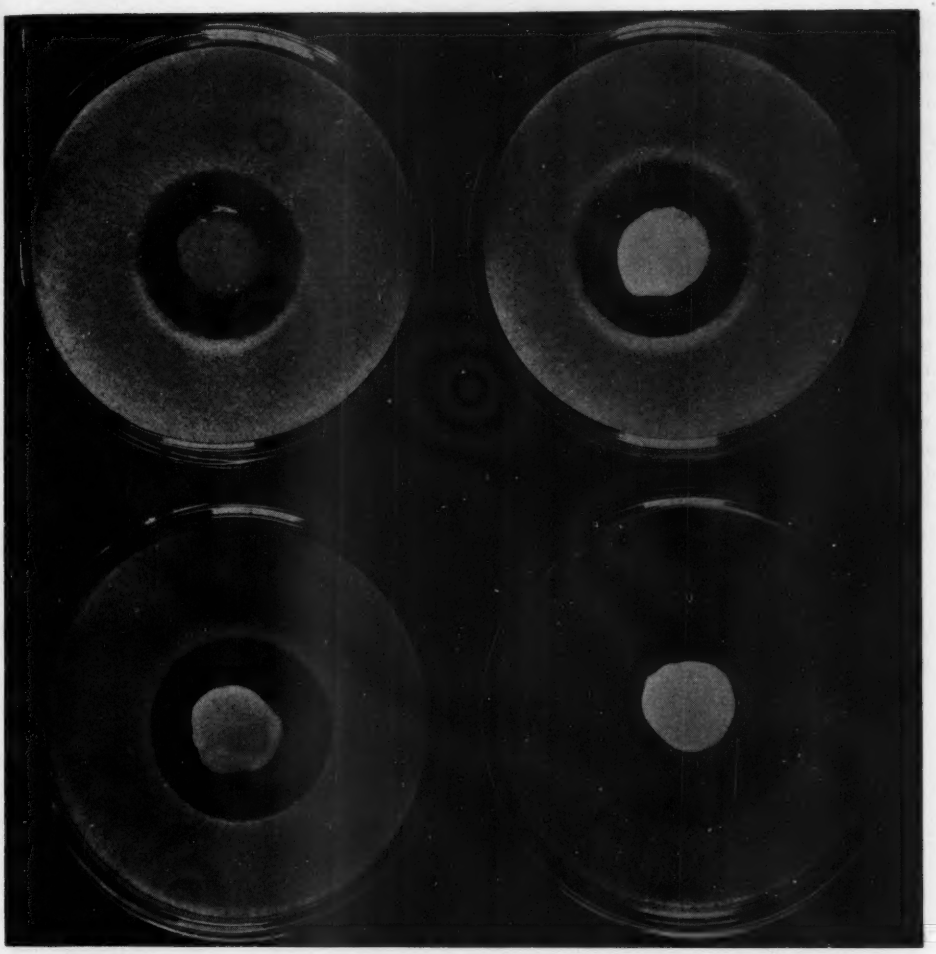
White wax	13.0 Gm.
Ceresin	6.4 Gm.
Mineral oil	55.0 cc.
Borax	0.6 Gm.
Water	25.0 cc.

A modified Agar Plate Method as described in a previous paper[1] was used. Briefly, this method consisted of inoculating Sabouraud's maltose agar with a suspension of the strained organism from a 20-day culture. The inoculated media was poured into a sterile Petri dish and allowed to harden. Approximately 0.5 Gm. of the ointment to be tested was spread as evenly as possible over the surface of an 18-mm. cover glass which was then placed ointment side down on the hardened media. In this way a definite area of the media was covered and the ointment was evenly distributed over this area. The results were based on the width of the clear zone surrounding the ointment at the end of 14 days of incubation at room temperature.

Table I shows the results based on the average of five separate tests on each organism with each ointment.

Table II shows the results based on an average of five separate tests on each organism with each ointment. This series of ointments contained 6 per cent of benzoic acid and 3 per cent of salicylic acid (one-half the amounts prescribed for the official ointment).

Presented before the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, Detroit meeting, 1941.



Upper left: Whitfield's ointment, N. F.
Upper right: Whitfield's ointment with cold cream base.
Lower left: Whitfield's ointment with 2½ per cent thymol.
Lower right: Whitfield's ointment with cold cream base and 2½ per cent thymol.
Test organism, Trichophyton rosaceum.

DISCUSSION OF RESULTS

When the official formula for Whitfield's Ointment was modified to contain either thymol or cold cream there was little difference in fungistatic value between the full-strength and the half-strength ointments. The addition of thymol increased the fungistatic action of the ointments tested, but this increase was most marked when cold cream was used as the base. The effect of the addition of thymol was particularly noticeable when *Trichophyton rosaceum* was used as the test organism. In this case not only was the surrounding zone free of any growth during the two weeks' incubation period but the growth outside the clear zone was free of the characteristic dark red spores which formed abundantly when the ointments not containing thymol were used. This suggests some restrictive action on the growth of the organism beyond the limit recorded by the clear zone.

In tests conducted in a similar manner, the official ointments of yellow oxide of mercury,

ammoniated mercury, and iodine did not inhibit the organism *Trichophyton rosaceum* to any noticeable extent nor did they prevent the formation of the rose-colored spores. The organism in each case grew to the edge of the ointment.

CONCLUSION

It was concluded that the addition of 2½ per cent of thymol and a change of the official base from petrolatum and lanolin to cold cream would increase the fungistatic action of Whitfield's ointment. It was also concluded that the reduction of the benzoic and salicylic acid content of the official ointment to one-half the given amounts would not materially lessen the fungistatic value of the ointment if cold cream were used as the base or if thymol were added to the present formula.

SUGGESTED FORMULA

The following formula is therefore recommended as a modification of the official formula when the ointment is designed for fungistatic use:

Benzoic acid	6.0 Gm.
Salicylic acid	3.0 Gm.
Thymol	2.5 Gm.
Mineral oil	2.5 cc.
Cold cream, *q. s.*	
	100.0 Gm.

[1] O'Brien, F. J., and Bonisteel, W. J., JOUR. A. PH. A., *Scientific Edition*, 30 (1941), 191.

TABLE I.—FUNGISTATIC EFFECT OF FULL-STRENGTH WHITFIELD'S OINTMENT N. F. AND CERTAIN MODIFICATIONS OF IT ON THREE COMMON FUNGI

Form of Whitfield's Ointment Used	Organism Used: *Trichophyton interdigitale*	*Trichophyton rosaceum*	*Monilia albicans*
	Clear Zone in Mm.		
Whitfield's Ointment, N. F.	12	7[a]	7
Whitfield's Ointment in cold cream base	No growth	11[a]	10
Whitfield's Ointment, N. F., with 2½% thymol	No growth	9	9
Whitfield's Ointment in cold cream base with 2½% thymol	No growth	17	13

[a] Some hyphae penetrated clear zone after one week's incubation.

TABLE II.—FUNGISTATIC EFFECT OF HALF-STRENGTH WHITFIELD'S OINTMENT AND CERTAIN MODIFICATIONS OF IT ON THREE COMMON FUNGI

Form of Whitfield's Ointment Used	Organism Used: *Trichophyton interdigitale*	*Trichophyton rosaceum*	*Monilia albicans*
	Clear Zone in Mm.		
Half-Strength Whitfield's Ointment, N. F.	8	5[a]	5
Half-Strength Whitfield's Ointment in cold cream base	No growth	10[a]	10
Half-Strength Whitfield's Ointment, N. F. with 2½% thymol	No growth	9	9
Half-Strength Whitfield's Ointment in cold cream base with 2½% thymol	No growth	16	13

[a] Some hyphae penetrated clear zone after one week's incubation.

Take part in

NATIONAL PHARMACY WEEK

October 19—25

THE PHILOSOPHY OF THE FOOD, DRUG AND COSMETIC ACT

by THEODORE G. KLUMPP, M.D.

DIRECTOR, DIVISION OF DRUGS, FOODS AND PHYSICAL THERAPY
OF THE AMERICAN MEDICAL ASSOCIATION AND FORMER
CHIEF OF THE DRUG DIVISION OF THE FOOD AND DRUG ADMINISTRATION

AN AUTHORITATIVE DISCUSSION OF THE BACKGROUND OF THE LAW; THE PROVISIONS REGARDING NEW DRUGS, HABIT-FORMING DRUGS, DANGEROUS DRUGS, AND REFILLS OF PRESCRIPTIONS; AND THE PHARMACIST'S RESPONSIBILITY

ON JUNE 12, 1933, Senator Royal S. Copeland introduced his first bill to revise the Food and Drugs Act of 1906. Its life was so short and violent that by January 4, 1934, seven months later, Senator Copeland was ready with another bill.

"The original bill which I presented met with violent opposition from every section of the country, and the new bill is intended to be a substitute for the other, and I hope it will be reasonably satisfactory to all parties," said Senator Copeland.

In reply, Senator Norris stated, "I would like to suggest to the Senator that he probably will not be able to introduce a bill on this subject which will not meet with some objection unless the Senator introduces a bill which will not hurt anybody, and such a bill would do nobody any good."

Senator Copeland's second bill was overrun with a speed resembling the highly organized mechanized blitzkrieg tactics of later days. On February 19, 1934, only a month and a half later, Senator Copeland introduced his third bill and at this time stated, "Mr. President, I desire to say for myself that I thought I had had all the trouble one could have in this life; but in all my experience I have never had so many worries and so much trouble as I had in connection with this bill. . . . There is to be a public hearing on the 27th, when anybody who is interested in firing a few more shots at food and drug control may have that opportunity."

There were more shots—so many, in fact, that this bill, like its two predecessors, was left in pieces. On January 3, 1935, Senator Copeland introduced still another bill, his fourth, but this too went the way of its antecedents and died.

On January 6, 1937, Senator Sheppard, acting for Senator Copeland, introduced the heir apparent to the previous lineage of assassinated bills. After a year and a half in which numerous changes were made, it finally became law as the present Food, Drug and Cosmetic Act. Altogether, legislation designed to remedy the defects in the old Food and Drugs Act of 1906 was before the Congress of the United States almost continuously for a period of five years.

When contemplated from a broad point of view, it is a curious commentary on our national life that it should have been so difficult to enact a law to adequately safeguard the public with respect to the things we take into our bodies. What a paradox that we should care least about the things that affect us most.

Let us consider for a moment the simplicity of our civilization in 1906 when the original law was passed and think of the tremendous growth in its complexity in the intervening thirty-two years. There were no commercial canned goods to speak of in 1906; there was no cosmetic industry; the automobile was just coming on the scene; the telephone was still a local luxury enjoyed by very few, and, of course, there was no radio. Advertising was a crude, unimportant element in our life. Synthetic chemistry and chemotherapy had not yet begun to influence the drug business.

SOCIETY PROTECTS ITSELF

On the other hand, by 1938 society had become rather efficient in protecting and safeguarding itself against dangers in other spheres. To mention a few examples, in 1938 one could not build a house in a community without having the architect's plan submitted for approval. You couldn't

An address given before the Association of Food and Drug Officials of the United States at St. Paul, Minn., June 12, 1941.

hire a plumber and an electrician unless he was licensed and qualified to do the work. And not only that, the electric wiring and plumbing had to be inspected and approved before they were permitted to be used. Airplane pilots were required to pass rigid examinations and had to be licensed.

But in early 1938 any person who had a desire to get rich quick or a yen for pharmaceutical experimentation, or a crackpot notion that some weed growing in his garden had medicinal value, could make up any drug concoction he pleased and turn it loose upon a guileless public for internal consumption. He could leave it to inspiration or divine guidance to tell him what the stuff was good for, or he could hire an advertising man to advise him on the money-making potentialities of various claims. Each week the Food and Drug Administration—and this is still the case—received up to a hundred communications from butchers, bakers, housewives, automobile mechanics, Indian squaws, and other equally unqualified persons who are interested in marketing a new food, cosmetic, or drug.

DR. THEODORE G. KLUMPP

A few weeks ago someone tried to put a preparation on the market for growing hair. Its active ingredient was sheep manure. We also had a new drug application for an article composed of 7 oz. of apple cider vinegar and 3 fresh chicken eggs, shells included, offered as a cure for malaria. Another person from Texas wanted to put on the market a device which he called a death meter by means of which one could tell the certainty whether a person was dead or alive. We were tempted to say in comment that maybe in his community they really needed such a machine to distinguish the quick from the dead. Truly, the regulation of traffic in foods, drugs, and cosmetics had been a backward child and in many ways it is still a child with a mental age of less than 12. But for all this, the Food, Drug and Cosmetic Act of 1938 is an important step in the right direction. It is a big step, the biggest one taken in the 166 years of our national history. The bill that was finally enacted into law is replete with provisions showing the legislative purpose of safeguarding the public health and preventing deceit upon the purchasing public. This purpose guides the formulation of administrative policies in the enforcement of the Act.

HABIT-FORMING DRUGS

Section 502 (*d*) relates to certain drugs and their derivatives that are considered to be habit-forming. The Act provides that they shall be labeled with the legend "Warning: May be Habit-Forming."

There has been some discussion as to what constitutes a habit-forming drug. This is not an easy question to answer since habit-formation is dependent, first of all, upon a drug that is administered, and, secondly, upon the reaction of the individual to the drug. Nevertheless, the gage of what constitutes a habit-forming drug was set by Congress in the list of drugs mentioned in the law. In other words, by legislative enactment paraldehyde, codeine, marihuana, barbituric acid, and chloral, as well as morphine and opium, are habit forming. This provides the yardstick by which the Administrator of the Federal Security Agency is instructed by Congress to measure the habit-forming characteristics of the derivatives which he is required by law to designate.

Scientists have drawn a distinction between drug addiction and drug habit-formation. Habit-

formation is a broader and more inclusive term and may be defined as a physical and mental disturbance developed as the result of the repeated action of a drug. As a result of this disturbance the victim feels it necessary to continue the use of the drug and such continued use acts to the detriment of the individual. When deprived of the drug the victim experiences unpleasant mental and physical reactions which are ordinarily capable of being dissipated by appropriate doses of the drug. Drug addiction is an intense form of drug habituation. It is ordinarily induced by drugs having a pronounced and readily recognized effect upon the sensorium, but any drug capable of causing habituation may lead to addiction in susceptible individuals.

BARBITURATES ON PRESCRIPTION

It is, of course, self-evident that a drug subject to Section 502 (*d*) is likewise subject to all the other sections of the Act. There has been a growing awareness of the evils of the indiscriminate use of barbituric acid derivatives. It is our considered judgment that these drugs should not be indiscriminately distributed and it is our purpose to proceed vigorously within the scope of our authority to limit their distribution to prescriptions by licensed physicians. We hope that we may have the help of state and municipal enforcement provisions in curbing this evil. I am sure that the retail distributors of these drugs will want to coöperate in this endeavor, and in the long run such coöperation will be to their advantage. If this hazard to health is not checked through existing legislative provisions, it is my considered opinion that more drastic legislation will be in the offing.

"NEW DRUG" PROVISION

The "new drug" provisions of the Food, Drug and Cosmetic Act—Section 505—embodies an important advance in protective legislation. It is a sobering thought that this section of the Act would never have been enacted without the sacrifice of human lives in the Elixir of Sulfanilamide tragedy. In the enforcement of Section 505 the Food and Drug Administration is concerned with the safety of drugs that are intended to be placed on the market. Whatever influences the safety of a drug has a bearing on the application of Section 505. This section, in our judgment, applies to drugs as individual articles, not as collective groups. We have been repeatedly asked by drug manufacturers and others, in filing a new drug application, whether it is necessary to file an application for, let us say, sulfapyridine, when other manufacturers have already placed sulfapyridine on the market. It is our interpretation of the Congressional intent that each manufacturer of sulfapyridine or any other drug must file his own application. This is altogether logical when one considers that Congress has made provision for the methods used in and the facilities and controls used for the manufacture, processing, and packing of drugs. From this it is evident that in considering a new drug application the Food and Drug Administration is required to study carefully the facilities and controls of each applicant and these we have plenty of reason to believe differ from one manufacturer to another.

ADEQUATE CONTROLS

A recent succession of serious incidents has emphasized the importance of adequate controls in the manufacture of drugs. The Food and Drug Administration, cognizant of its responsibility in this connection, is making an intensive study of prevailing control facilities. New drug applications will not be permitted to be effective where such controls are insufficient to insure the preservation of standards of strength, quality, purity, and identity of drugs.

We have received numerous requests from officials of state and municipal enforcement agencies for lists of new drugs, the applications of which have been permitted to become effective. While we are altogether sympathetic with the purpose that prompts such requests, we do not feel that the spirit of Section 301 (*j*) and (*l*) of the Act permits us to make a blanket revelation of this information. Where an enforcement official has a specific interest in a drug which has come within his purview and makes inquiry concerning the status of such a drug under the federal law, we shall, in accord with our long-standing policy, be glad to answer responsively to such specific requests.

WHEN IS A DRUG SAFE?

The new drug section of the Act places very grave administrative and technical responsibilities on the shoulders of the Food and Drug Administration. We are called upon to predict before a new drug is placed on the market whether

or not that drug is going to be safe for use. The industry and ingenuity of thousands of organic and synthetic chemists make it a particularly trying task. To date we have received almost 5000 new drug applications. But when shall we consider a drug safe for use?

On first impression it might appear that safety can be considered as an isolated attribute of a drug, but this is not true since every potent drug carries with it a certain potentiality for harm. For instance, I think it is proper to say that the drug arsphenamine may be considered a safe drug in the treatment of syphilis even though it kills occasionally and causes many instances of damage. On the other hand, would we consider the intravenous use of arsphenamine a safe and ordinary treatment for dandruff? I think not. The important point is this: We do not tolerate reactions of the same character and extent where a drug has some insignificant therapeutic effect. In a broad sense, we may say that a drug is safe when the expected therapeutic gain justifies the risk entailed in using it, or, as a sporting man might put it, a drug is a good bet when the odds are favorable, the stakes are worth the risk and there isn't a better bet available. Some day arsphenamine may be regarded as an unsafe drug when other antisyphilitics are found which will do the same job more safely than arsphenamine.

Unfortunately, however, there is no absolute scientific yardstick as to when a drug is safe enough to use and decisions on these questions must bring to bear the collective opinions of the outstanding experts in the country. For some of the more potent drugs it has been necessary to conduct extensive investigations. For instance, when we were considering sulfapyridine and sulfathiazole our medical officers travelled through the entire country reviewing case reports, discussing the problem with outstanding authorities in chemotherapy, and actually going into the clinics and getting first-hand information on the use of the drug.

DANGEROUS DRUGS

Section 502 (*j*) which outlaws dangerous drugs is in some respects the counterpart of the new drug section of the Act. It is, however, by no means the mirror image of the new drug section, differing in several notable respects. It is evident, however, that as time goes on a constantly increasing proportion of drugs on the market will be drugs which have come through the new drug section of the Act. On the basis of our present conception of the law, it appears that the new drug section of the Act will become increasingly more important and the dangerous drug section reciprocally less so. It is our opinion that when a new drug application has been permitted to become effective, the drug involved remains subject to the new drug section of the Act indefinitely. In other words, the new drug application can be suspended for proper cause at any time. Once a new drug, always a new drug. As a counterpart of this, it should also be mentioned that any change in the composition or labeling of such a new drug which affects the safety of the drug may, according to existing regulations, make it necessary to refile a new drug application.

In considering the meaning of the term "dangerous" as applied to drugs, we must assume that Congress chose the word "dangerous" with deliberation. You will note that the terms "deleterious" and "injurious" are employed in other sections of the Act so we may again assume that the word "dangerous" was deliberately chosen to mean something quite different.

In a strict sense, anything that creates a sense of insecurity is dangerous. An open well in a yard in which children are playing is dangerous. We don't have to produce the lifeless body fished out of the well to be convinced of the danger. To carry the analogy a little farther, England is in danger of invasion before a single Nazi has set foot on English soil. Applying the analogy to drugs, we don't believe it should be necessary to wait until people have been poisoned or killed before we can proceed against a drug as dangerous. In other words, the element of danger actually precedes the element of injury. After an injury has occurred, the drug is both injurious and dangerous. But we won't know with finality what constitutes a dangerous drug until the Federal Courts, perhaps the Supreme Court, have interpreted the law for us. Looking at it philosophically, it is a curious phenomenon of our civilization that nine old men, none of whom is a physician, should ultimately decide what a dangerous drug is.

"PRESCRIPTION USE ONLY" DRUGS

In the administration of Section 502 (*j*) it is apparent that certain fundamental distinctions must be made between drugs dispensed over the

counter generally and those offered for sale only under the direction of a physician. In other words, certain drugs may not be dangerous when they are administered by one who has been trained to make an accurate diagnosis and who is familiar with the established indications and contra-indications for the use of a drug.

A similar distinction between trained and untrained persons has long since been applied by society in other directions where there is risk to life and welfare. For instance, only individuals who have met certain qualifications and are duly licensed can be permitted to fly transport planes. Even the installation of plumbing and electric wiring in the home must be made in most communities by a trained individual. By the same token, it is clear that certain drugs are potentially dangerous unless administered under special conditions.

Toward this end the Food and Drug Administration has indicated that certain drugs in therapeutically significant amounts would be considered dangerous if shipped in interstate commerce for use without a physician's prescription. In this class, for example, are sulfanilamide and its derivatives, thyroid, benzedrine sulfate tablets, aminopyrine, cinchophen, neocinchophen, cantharides, aconite, chrysarobin, chrysophanic acid, colchicine, colchicum, emetine, phosphides, phosphorus, radioactive drugs, thiocyanates. This list is, of course, not a complete one. As a matter of fact, it would be scientifically untenable to attempt to draw up a fixed and final list of dangerous drugs since it must change as scientific facts are developed and further experience is acquired.

PRESCRIPTION REFILLS

The restriction of such potent and potentially dangerous drugs as are given in the above list places a serious responsibility upon both the medical profession and the pharmacist. In the past physicians have not always clearly indicated on their prescriptions how many times such prescriptions could be refilled. We have encountered many instances of bromide intoxication and barbiturate habit-formation that were permitted to develop because an original prescription was refilled indefinitely. It is to be expected that both the medical and pharmaceutical professions will give more thought to this serious source of indiscriminate drug use.

It is, of course, recognized that there are many drugs, such as, for instance, insulin, which are intended to be dispensed repeatedly over long periods of time. In the enforcement of the law the Food and Drug Administration has no intention of placing an undue burden upon the patient to obtain another prescription unless it is necessary. However, in this matter the pharmacist bears an important legal responsibility. It is his obligation to assure himself before refilling a prescription that it is the physician's intention that such prescription shall be repeated.

We believe that the pharmacist is charged with a definite responsibility under the law. This responsibility is to see that the provisions of the Act are carried right through the last transaction coming within the jurisdiction of the Act. He is the last link in the efficient chain of protection. Unless it holds fast, the protection the public should receive from the Act may be seriously impaired, if not altogether destroyed.

DIRECTIONS AND WARNINGS

The administration of Section 502 (*f*) (1) and (2), which requires adequate directions for use and adequate warnings, is a most interesting problem. Not only is it essential to consider each specific question that is raised under this section of the Act, but each question must be reviewed in the light of the labeling of all drug preparations on the market. It is an inescapable fact that any substance capable of affecting the structure or any function of the body or influencing disease is likewise capable of causing untoward effects under certain conditions of use. You can't have a sharp knife without some risk of getting cut. But would it do any good to insist upon warning statements for every active drug on the market? Would the public be protected if each label were to bear a treatise on every known side reaction that has ever been described? We are certain that Congress intended us to take a practical view of the situation. We believe that a warning statement on the labeling of every active drug would soon destroy the effect of warning statements in general. The public would soon disregard such warning statements just as they would inevitably disregard a speed limit of 15 miles an hour on a four lane open highway.

In considering the warning statements, then, we have felt it necessary to adopt a version of

Einstein's theory of relativity. In comments on labeling the Food and Drug Administration has advised the employment of warning statements only in such instances in which there is a genuine need for them. We have also in our comments attempted to adopt language suited to the relative importance of the warning statements provided. For instance, where the consequences of use might endanger life, it has been our policy to comment favorably only on warning statements which are couched in strong and arresting language. Where the consequences of use might be disagreeable but not seriously threatening, we have not frowned upon warning statements in milder language.

I have had the privilege of joining in the work of the Food and Drug Administration. The time has come when I may be permitted to say a word about the organization that has the important responsibility of administering the provisions of the Federal Food, Drug and Cosmetic Act. Under the leadership of Mr. Campbell and Dr. Dunbar is a group whose devotion to their work, whose ability, fairness, and esprit de corps is outstanding. So long as individuals such as these are functioning, I believe we may feel confident that the administration of the Act rests in competent hands. Any group—governmental or otherwise—is fortunate indeed to have leaders as wise and able as Mr. Campbell and Dr. Dunbar and a personnel as responsive to such leadership as those who make up the Food and Drug Administration. I am proud to have been a member of it.

Local and Student Branches

Name	President	Secretary	Meeting Date
Baltimore	M. J. Andrews	R. S. Fuqua, 1432 Carswell St.	
Chicago	Lawrence Templeton	E. E. Vicher, 1524 S. Lombard Ave., Berwyn	Third Tuesday
City of Washington	Kenneth L. Kelly	L. G. Gramling, Geo. Wash. Univ.	Third Monday
Michigan	Walter M. Chase	Bernard Bialk, 11655 Hamilton Ave., Detroit	
New York	Leonard W. Steiger	Frank P. Pokorny, 115 W. 68th St.	
Northern New Jersey	R. A. Deno	C. L. Cox, 1 Lincoln Ave., Newark	
Northern Ohio	Joseph J. Opatrny	Douglas B. Pew, 3670 E. 163rd St., Cleveland	
North Pacific	Ed. Stipe	F. A. Geue, 1220 S. W. Stark St., Portland, Ore.	
Northwestern	E. B. Fischer	C. V. Netz, College of Pharmacy, Minneapolis	
Philadelphia	Arthur Osol	R. N. Blythe, c/o Smith, Kline & French Co.	
Pittsburgh	Edward P. Claus	F. S. McGinnis, 3601 Fifth Ave.	Third Tuesday
Western New York	J. Raymond Bressler	George W. Fiero, 3502 Main St.	
	STUDENT BRANCHES		
Alabama Polytechnic	Charles R. Barron	Beth. M. Murphy, Box 188, Auburn	
University of Connecticut, College of Pharmacy	Jack White	Betty Colgan, 25 Beechwood Ave., Bridgeport, Conn.	
Ferris Institute	Henning Engmark	Morris Fockler, Ferris Institute	
George Washington University	F. D. Cottrill	G. O. Chilcoat	
Loyola University	Ronald L. Macke	Catherine E. Chadwick, Loyola School of Pharmacy	First Thursday
Louisville College of Pharmacy	John J. Furlong	H. L. Alexander, 3rd & Oak Sts., Louisville	
Ohio State University College of Pharmacy	William Roberts	Margaret Timmons, 1952 Iuka Ave., Columbus	
Pittsburgh College of Pharmacy	Harry Bonchosky	George Kelly, 3366 Webster Ave.	
Purdue University School of Pharmacy	George E. Osborn	J. H. Houseworth, College of Pharmacy	
Rhode Island College of Pharmacy and Allied Sciences	Lawrence J. Bartley	John Stadnick, Rhode Island College	
St. John's University	Lester Rosenstein	Sister M. Etheldreda, 95 Bushwick Ave.	
Southern College of Pharmacy	J. R. Eaves	Annette Williams	
State College of Washington	Theodore Hagen	Haakon Bang, Box 124, Pullman	
State University of Iowa College of Pharmacy	George T. Weirick	Delpha L. Donner, Eastlawn, Iowa City	
Temple University	Alton G. Grube	Marie Steigerwalt, Andreas, Pa.	
University of California	H. K. Iwamoto	Peggy Kreizinger, Univ. of California	
University of Southern California	Otto Lensing	Mrs. A. Scott, 3607 S. Hoover St., Los Angeles	
University of South Carolina	W. J. Vernon	Doris Sox, Box 214, West Columbia, S. Car.	
University of Florida	J. F. Cooley, Jr.	R. H. Weaver, Jr., 1634 W. Univ. Ave., Gainesville	
University of Mississippi	Harry Lynch	Marguerite Holmes, University, Miss.	

A. PH. A. SUPPORTS
RESEARCH PROJECTS IN FIVE COLLEGES

COUNCIL APPROVES STUDY OF SENNA, CANTHARIDES, SCLEROSING AGENTS, OIL OF CINNAMON AND N. F. CHEMICAL MONOGRAPHS

FIVE research fellowships for the study of specific pharmaceutical problems have been approved by the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION and financial grants have been made to those who will carry on the work. It is hoped that through these research projects our knowledge of the actions and uses of drugs will be expanded and pharmacists will be able to render greater services to physicians and the public. The five studies undertaken for 1941–1942 are as follows:

SCLEROSING AGENTS

At the College of Pharmacy of the University of Nebraska, Howard Jensen is working under the supervision of Dr. Joseph B. Burt on sclerosing agents used in the injection treatment of varicose veins.

Sodium morrhuate is the most widely used and most generally satisfactory drug for this purpose at present but there is considerable variation in the commercially available parenteral solutions of the salt. Few manufacturers buy sodium morrhuate as a chemical; most of them prepare it from cod liver oil. Each manufacturer has his own idea of what it should be and the solutions on the market vary accordingly. The side reactions, many of which may be attributed to improper preparation of the solutions, cause great discomfort and frequently agonizing pain to the patient. Thus a good, standardized solution of sodium morrhuate is needed. The study may even develop a new sclerosing agent.

It is hoped that a collaborator may be found to carry on pharmacological studies.

FLUIDEXTRACT OF SENNA

At the Purdue University School of Pharmacy, research is being carried on under the supervision of Dr. C. O. Lee in an effort to prepare a fluidextract of senna which will not precipitate on standing. This work started last January and excellent progress is being made. It is hoped that the study will provide information which will be useful in the case of other vegetable drugs.

CANTHARIDES

At the School of Pharmacy of the University of Wisconsin, research is being conducted under the supervision of Dr. Lloyd M. Parks, to improve the official assay of cantharides and to develop an assay for and improve the method of preparation of tincture of cantharides. The present world crisis has curtailed supplies of this drug and other insects are being used, emphasizing the need for standards to evaluate these new materials.

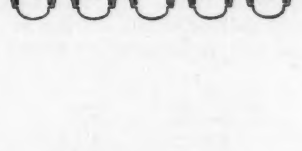
OIL OF CINNAMON

At the Ohio State University College of Pharmacy, Roy C. Darlington is studying oil of cinnamon to develop improved standards for determining the constituents. The work is under the supervision of Dr. B. V. Christensen.

N. F. CHEMICALS

At the University of Minnesota College of Pharmacy, W. Thomas Spain is studying the chemical monographs of the National Formulary in order that the standards contained in this compendium may reflect present-day knowledge.

Every profession has an obligation not to exist merely on the information which is available concerning its field, but to devote a fair share of its time, work, and finances to increasing the store of knowledge which is the basis of its practice. Each year the AMERICAN PHARMACEUTICAL ASSOCIATION issues an announcement of the availability of research grants, receives applications, and selects those studies which it will support.



NEW PRESCRIPTION SPECIALTIES

SODIUM ASCORBATE SOLUTION

For patients who are severely ill or those with abnormal requirements of vitamin C such as are connected with surgical procedures, and for patients with poor utilization or faulty absorption of this vitamin, Squibb has introduced Solution Sodium Ascorbate for intravenous administration.

The solution contains, in each cc., an amount equivalent to 100 mg. of ascorbic acid (2000 U. S. P. XI units of vitamin C). The average dose of the product is 1 cc.

It is supplied in 1-cc. ampuls, in boxes of 6 and 25.

E. R. Squibb & Sons, New York, N. Y.

STILBESTROL

This new synthetic estrogen, described in detail elsewhere in this issue, has the advantages over natural estrogens of being effective when administered by mouth, and of being less costly. It is said to produce all of the physiologic effects of the natural estrogens.

The chief use of stilbestrol will be in the treatment of the menopausal syndrome, but it will also be prescribed for the treatment of senile vaginitis, gonorrheal vaginitis and in the prevention of painful engorgement of the breasts during suppression of lactation postpartum.

Stilbestrol is administered as follows, subject to the physician's decision based on individual cases: orally, 0.1 mg. to 1 mg. daily; intramuscularly, 0.5 mg. to 2 mg. two to three times weekly; by suppository, 0.1 mg. or 0.5 mg. daily; larger doses (5 mg. one to three times daily for 2 to 4 days) are given for the suppression of lactation.

The product is available as follows:

Winthrop Chemical Company:

Tablets of 0.1 mg., 0.5 mg. and 1 mg. in bottles of 50, 250 and 1000.

Ampuls (Stilbestrol in Oil), 0.5 mg. in 1 cc., 1 mg. in 1 cc., in boxes of 5 and 25.

Suppositories, 0.1 mg. and 0.5 mg. in boxes of 5.

Eli Lilly and Company:

Tablets of 0.1 mg., 0.25 mg., 0.5 mg. and 1.0 mg., in bottles of 40, 500 and 1000.

"Enseals" (Enteric-Sealed Tablets) of 0.1 mg., 0.25 mg., 0.5 mg. and 1.0 mg. in bottles of 40, 500 and 1000.

Suppositories of 0.1 mg. and 0.5 mg., in boxes of 6 and 50.

Ampuls (Stilbestrol in Oil), 0.5 mg. in 1 cc. and 1 mg. in 1 cc., in packages of 6, 25 and 100.

SULAMYD TABLETS

A new sulfanilamide derivative, *sulfacetimide*, for the treatment of urinary tract infections—especially *B. coli*—and for gonorrhea. Each tablet contains 0.5 Gm.

Dosage of this new drug is as follows: In *B. coli* and non-specific urinary tract infections, 4 Gm. per day may be given for the first three days; 3 Gm. per day for the second three days and 2 Gm. per day for the last four days. Each of the ten daily doses should be divided into four parts. In acute gonorrhea, 4.5 Gm. daily for seven days.

Sulamyd tablets are available in boxes of 30, costing the pharmacist $1.30; boxes of 60, costing $2.35; boxes of 100, costing $3.65; and boxes of 1000, costing $32.10.

Schering Corporation, Bloomfield, N. J.

COLLOIDAL ALUMINUM HYDROXIDE

A colloidal, aqueous suspension of approximately 3.5 per cent of aluminum hydroxide in water. It is neutral in reaction but is capable of neutralizing twelve times its volume of *N*/10 hydrochloric acid in 30 minutes. It is relatively non-toxic, does not interfere with the action of the digestive enzymes or cause a secondary rise in gastric acid, and exerts no demonstrable influence on the acid-base balance. It promotes the healing of peptic ulcers by offering mechanical protection of the affected area, and in the case of bleeding ulcers prevents digestion of the protecting clot.

It is supplied in 8-ounce bottles, costing $8.00 a dozen; and in gallon bottles, costing $8.00 a bottle.

The Upjohn Company, Kalamazoo, Mich.

LUDOZAN TABLETS

Ludozan, Schering Corporation's product of hydrated sodium aluminum silicate, is now available in tablet form. The tablets disperse rapidly and form a true gel at gastric pH with buffering, adsorptive, and protective action.

The product is intended for use in heartburn, sour eructation, pain, hyperacidity, alcoholic gastritis and in the treatment of peptic ulcer. They are palatable and provide quick relief.

Ludozan Tablets, plain or with belladonna, are offered in boxes of 24 tablets, costing the pharmacist $4.00 a dozen; boxes of 60 tablets, costing $8.00 a dozen; and boxes of 250 tablets, costing $28.00 a dozen.

Schering Corporation, Bloomfield, N. J.